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The Decision To Pursue Pharmacy Residency Training: Motivators, Barriers, And The Fear Of Missing Out (Fomo)

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THE DECISION TO PURSUE PHARMACY RESIDENCY TRAINING: MOTIVATORS, BARRIERS, AND THE FEAR OF MISSING OUT (FOMO)

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ABSTRACT

To examine the influence of Fear of Missing Out (FoMO) on student pharmacists when making postgraduate career decisions, including whether to pursue a residency. Data collection involved survey self-report (mixed mode approach) among student pharmacists (P2-P4) at four participating universities, to identify postgraduate residency intentions as well as the motivators and barriers associated with this choice. The survey included a 14-item FoMO scale designed to examine the influence of this factor in the residency decision. 42% indicated an intention to pursue residency training; the desire to gain experience was identified as the main motivating factor driving this decision. Other important motivating factors included anticipated job satisfaction, the desire to gain knowledge and specialized training, and the desire for a competitive advantage in the job market. Of the 58% of students indicating no intention to pursue a residency, the most influential barrier was availability of an existing job that did not require extra training. Other barriers included the delay of full-pharmacist salary, student loan debt, and pharmacy school burnout. When considering the influence of FoMO, results indicate that the phenomenon is present in this educational setting, with mean FoMO scores higher among student pharmacists in the second year of the curriculum. Additionally, FoMO score was used as a predictor variable and showed that as FoMO score increases, so does the odds of a student intending to pursue a residency (OR=2.62) This study identified additional motivators and barriers to residency training, beyond those examined in previous research. One such influencing factor is FoMO, although more research and scale refinement is needed in future studies to better identify the impact of this phenomenon on career choice in this population.

DEDICATION

This work is dedicated to my family:

To my husband, who has always believed in me, supported me, and been patient with me as I pursued my dreams;

To my parents, who taught me to never give up and always believe I could accomplish anything with hard work and determination;

To my children, who show me unconditional love and remind me daily of the importance of being a positive role model.

LIST OF ABBREVIATIONS AND SYMBOLS

FoMO	Fear of Missing Out
P2	Second year of professional pharmacy curriculum
P3	Third year of professional pharmacy curriculum
P4	Fourth and final year of professional pharmacy curriculum
AACP	American Association of Colleges of Pharmacy
ASHP	American Society of Health-System Pharmacists
PDI	Pharmacist Demand Indicator
PGY-1	Postgraduate Year 1 residency
PGY-2	Postgraduate Year 2 residency
APPE	Advanced Pharmacy Practice Experience
IPPE	Introductory Pharmacy Practice Experience
PharmD	Doctor of Pharmacy
FDA	Food and Drug Administration
NIH	National Institutes of Health

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CHAPTER I

INTRODUCTION

The landscape of the pharmacy profession is one of constant change and evolution. Contributing to this constant change are factors including the unprecedented growth in pharmacy education as well as the expansion of the role of the pharmacist (Knapp & Knapp, 2009; CCP, 2009). Along with an increase in the number of schools and colleges of pharmacy across the country, as well as increased enrollment at existing institutions, comes an increase in the number of PharmD graduates produced by these programs (AACP, 2016; Brown, 2013). This growth has an influence on the supply and demand relationship seen in the pharmacy workforce and has resulted in some relative uncertainty regarding job security among student pharmacists (Pharmacy Workforce Center).

One way in which the profession has responded to the growth in education is by expanding the role of the pharmacist beyond the traditional dispensing roles of the past (CCP, 2009). By providing more diverse services and allowing for adaptation of the role, the profession of pharmacy is able to create new and exciting roles for pharmacists. Accompanying these expanding roles, however, are also expectations for advanced training in some areas. Examples of postgraduate options for training that may be required include graduate education, fellowship training, and pharmacy residency training.

Among the available options, the pharmacy residency has become the most commonly pursued path of postgraduate education and training (AACP,2011). Many students and practitioners recognize the value in this method of advanced training and also understand that it

is often a requirement when considering certain pharmacy careers such as those in the clinical setting (McCarthy & Weber, 2013; McElhaney & Weber, 2014). Although valued in the profession, this method of advanced training is not without its barriers. One such barrier is the competitive environment currently surrounding the residency search and application process (McCarthy & Weber, 2013). Unfortunately, the number of residency programs does not meet the increasing demand seen by student pharmacists across the country (National Matching Service, 2015), resulting in increased competition for the programs which are available. For this reason, it is important to identify factors which are influencing the decision to pursue (or not to pursue) a pharmacy residency among students in order to provide more tailored mentoring approach for career choice.

Although research has been done to identify motivational factors associated with the decision to pursue pharmacy residency training (McCarthy & Weber, 2013), a few limitations are associated with these studies. First, existing studies were conducted in a retrospective manner utilizing samples of residents or faculty members (McCarthy & Weber 2013). Although this approach results in valuable information, no existing studies have utilized student pharmacists currently enrolled in a professional curriculum. This alternative approach may provide details regarding factors that are being considered by students who have yet to complete the residency search and application process, rather than those individuals who have successfully completed this process with favorable outcomes.

Another potential limitation identified in the currently available literature is the use of a limited list of motivators and barriers to pursuing residency training. The most recent study evaluating these factors was conducted in 2013 utilizing a list which was previously used in a 1995 study (McCarthy & Weber 2013). This approach was used for comparison purposes

between the two time points, but in doing so, may have eliminated important factors which can contribute to the residency training decision. This study included a variety of these unexplored factors in an attempt to gain a clearer perspective of the decision making process regarding pharmacy residencies.

One factor which may have an influence on the decision to pursue residency training is the phenomenon known as the Fear of Missing Out (FoMO). Most research involving this phenomenon has been published in technology-related literature focusing on social media and decisions related to FoMO (Przybylski, et al, 2013 & Alt, 2015). The limited literature available places emphasis on the use of social media as a way to stay connected to others and how FoMO may influence social media use. Currently, no applications of this phenomenon exist in the literature regarding career decision making, specifically for student pharmacists considering postgraduate pharmacy residency training.

The Fishbein Behavioral Model proposes a framework for understanding intentions to act, in this case to pursue residency training, as influenced by attitudes and subjective norms (Azjen and Fishbein, 1980). A modified version of this model (as shown in Figure 1) was used to guide the research.

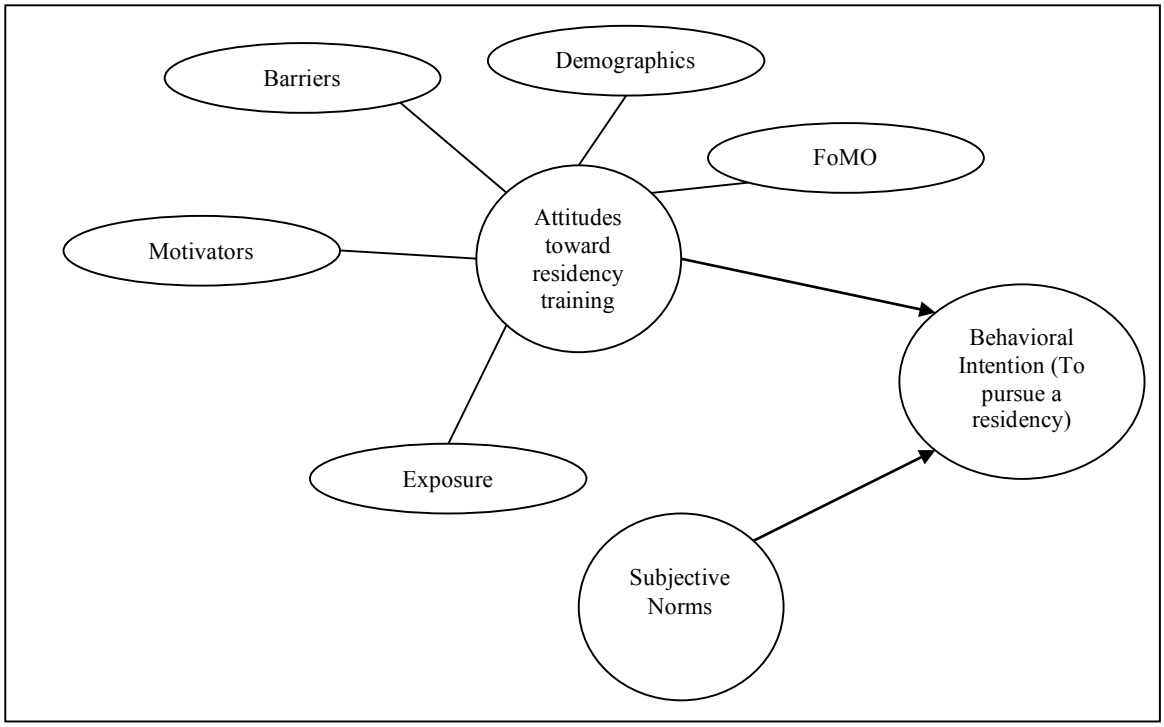

Figure 1 Modified Fishbein Behavioral Intention Model

In general, this study was conducted in order to further expand upon the current literature regarding motivators and barriers associated with the decision to pursue (or not pursue) postgraduate pharmacy residency training. This study also aimed to identify the potential role FoMO plays in this decision-making process. The research objectives for this study are as follows:

Objective 1: To identify motivating factors which influence the decision to pursue postgraduate pharmacy residency training among student pharmacists.

Objective 2: To identify barriers which influence the decision not to pursue postgraduate pharmacy residency training among student pharmacists.

Objective 3: To assess the influence of Fear of Missing Out (FoMO) on the decision-making process with regard to pursuance of postgraduate pharmacy residency training among student pharmacists.

CHAPTER 2

LITERATURE REVIEW

THE PHARMACY WORKFORCE

When discussing postgraduate pharmacy options, it is important to identify factors inherent to the profession which may play a role in the student decision making process. These factors can include trends in school growth such as the number of schools and colleges of pharmacy and resulting number of pharmacy graduates produced by these institutions each year, as well as the pharmacy work environment in general including the numbers and types of jobs available to these graduating students.

Trends in School Growth

Over the last two decades, substantial growth has been seen in the size of pharmacy school enrollment as well as in the number of schools and colleges of pharmacy across the country. As of July 2016, the total number of accredited schools and colleges of pharmacy in the United States was 136 (AACP, 2017). This is a significant increase compared to the 75 schools with PharmD curricula reported in the 1995-1996 academic year (Knapp & Knapp, 2009). In addition to an increase in the number of schools, there has also been an increase in yearly enrollment within these schools over the last fourteen years (Knapp & Knapp, 2009). Enrollment for the fall 2015 semester ranged from 32 to 2,031 students per college or school of pharmacy, and totaled 63,460 students across all campuses.(AACP, 2017).

Along with an increase in both the number of schools and colleges of pharmacy, as well as the increase in enrollment, comes an increase in the number of students graduating from these institutions. For the 2014-2015 academic year, almost 14,000 first professional degrees in pharmacy were awarded across the country, compared to an average of 7,000 degrees awarded in 2001 (AACP, 2017; Brown, 2013). A study published in 2011 estimated a 21% increase in the number of pharmacy graduates projected between the years of 2010 and 2015, with the number of graduates in the year 2015 estimated to be 13,856 (Knapp, et al, 2011). This projection proved to be accurate and with expected growth in the future, it can be assumed that the actual number of graduates in coming years will only increase.

Pharmacy Manpower

In past years, a shortage of pharmacists led to the expansion of pharmacy programs across the country. However, due to the increase in the number of pharmacy graduates, the gap between supply and demand has significantly diminished. The Pharmacy Workforce Center is an organization which collects, analyzes, and disseminates information regarding the demand and supply of licensed pharmacists in the United States. The Pharmacist Demand Indicator (PDI) is a report which measures supply and demand on a scale from 1 to 5, where 1 indicates a high surplus and 5 indicates a high demand (Pharmacy Workforce Center, 2017). According to the PDI for December 2016, which was reported as 3.09 for staff pharmacists, the current supply of pharmacists is almost equivalent to the demand. In terms of PDI trends, a steady decline in demand has been seen since 2006, and since the spring of 2009, the demand has not been higher than 3.8 (Pharmacy Workforce Center, 2017).

On the regional and individual state levels, the demand and supply are in relative equilibrium across the country with a few exceptions. Regionally, the highest level of unmet demand can be seen in the West at an index of 3.27, compared to 3.08 for the South, 2.83 for the Northeast, and 3.21 for the Midwest (Pharmacy Workforce Center, 2017). When evaluating individual states, the two with the highest levels of unmet demand for December 2016 were Alaska and Northern California, while the states with the lowest demand included Nevada, Maryland, and New Jersey (Pharmacy Workforce Center, 2017).

When considering supply and demand across the different practice settings, the PDI considers differences in community and institutional pharmacy (Pharmacy Workforce Center, 2017). For December 2016, the demand rating in the community pharmacy setting was 3.12, which may indicate a slight demand in these settings nationally. For the institutional settings, the index indicates a slight surplus at 2.83 (Pharmacy Workforce Center, 2017). Although these numbers continue to fluctuate on a monthly basis, the relative equilibrium of supply and demand across the country has many student pharmacies concerned about the availability of jobs upon graduation.

The Role of the Pharmacist

Although student pharmacists may be concerned about the future of the pharmacy job market, the expansion of the role of the pharmacist is one aspect of the profession that may put them more at ease. In the past, the traditional role of the pharmacist has been one focused more on dispensing activities, the supervision of medication distribution, and a limited amount of patient counseling (CCP, 2009). In today's pharmacy environment, the expanded role of the pharmacist includes activities such as participating in team-based care through a clinical role,

providing medication therapy management, and taking an active role in disease prevention (CCP, 2009). As a testament to the expansion of pharmacy-provided services, almost all states allow for the provision of these services through collaborative practice agreements with physicians or other prescribers (Weaver, 2013). Other examples of the expanding role of the pharmacist are the ability to prescribe in some states, the integration of pharmacist-provided medication management into many healthcare environments, and the provision of medication reconciliation services (Avalere Health, 2013). It is through some of these expanded roles that future pharmacy graduates will be able to find unique career options, despite the rise in the number of licensed pharmacists.

THE PHARMACY RESIDENCY

Value of Residency Training

As defined by the American Society of Health-System Pharmacists (ASHP), a pharmacy residency is "a postgraduate program of organized education and training that meets the requirements of applicable standards set forth and approved by ASHP."(ASHP, 2010) Pharmacy residency experiences can be categorized as either postgraduate year 1 (PGY-1) or postgraduate year 2 (PGY-2) (ASHP, 2016a). In general, a PGY-1 residency is one in which residents gain valuable skills that will help them excel in career areas such as community, hospital, consultant pharmacy, managed care, industry, academia, and federal pharmacy (see Table I) (McElhaney & Weber, 2014). This general, one-year experience is geared toward developing leadership skills, improving residents' ability to provide patient-centered care, refining and enhancing problem-solving skills, and further providing to the growth and development of the residents' clinical judgment (ASHP, 2016a).

Table I. Types of ASHP accredited PGY-1 residency programs

PGY1 program	**Training**
Community pharmacy	Pharmacist-provided patient care services such as MTM and disease state management Learn how to bill and obtain payment for such services Practice using collaborative and integrated care models Acquire the ability to establish advanced community practice sites Learn how to provide drug information responses
Managed care	Learn how to utilize the 3 practice models: 1. Individual patient care 2. Care provided to target groups 3. Population care management Learn the skills to practice in a variety of health care organizations Learn formulary development/maintenance and contracting
Institutional practice	Develop clinical and communications skills in a variety of practice environments and sample various areas of pharmacy specialization Learn how to provide consultative and drug information services Obtain necessary skills development, professional experience, and maturity to progress to advanced specialty practice residencies

*adapted from Table 1 in McElhaney & Weber 2014

A PGY-2 residency, in contrast, is a more specialty-focused experience designed to better prepare residents for careers as clinical pharmacy specialists in more specific patient-care areas, ranging from infectious diseases to ambulatory care to emergency medicine (ASHP, 2016). Although the specialty areas available for the second year residency are varied, the availability of these programs is somewhat limited in number compared to the general PGY-1 experience (ASHP, 2016a; National Matching Service, 2015).

Benefits of completing a residency include a potential advantage in an increasingly competitive job market, the ability to network with others in the pharmacy profession, enhanced career planning opportunities, and professional vision (ASHP, 2016b) Also, completion of pharmacy residency training is stated to provide an average of three to five years of work experience in the one or two year commitment (Lee, et al, 2004). In response to the changing role of the pharmacist, many students are considering pharmacy residency training as a means to meet the evolving demands of the profession. For those individuals wishing to pursue positions as clinical pharmacy specialists, as mentioned above, the completion of at least two years of pharmacy residency may be required to obtain these positions (ASHP, 2016a).

This position is one that is supported by various pharmacy organizations such as ASHP and the American College of Clinical Pharmacy (ACCP) (Murphy, et al, 2006; ASHP, 2007). In 2006, ACCP presented a vision for the profession of pharmacy in which residency training would be considered a requirement for all pharmacists providing direct patient care by the year 2020 (Murphy, et al, 2006). As defined by ACCP, direct patient care includes activities such as observation of the patient and the development of a pharmaceutical plan through selection, modification, and monitoring of patient-specific medication therapy (Murphy, et al, 2006). In many cases, the development of these patient-specific plans is done through the efforts of a multi-disciplinary team or during the efforts pursued through collaborative practice agreements with other healthcare providers (Murphy, et al, 2006). ACCP also states that "provision of direct patient care by virtually all pharmacists will be the standard of pharmacy practice in all patient care settings by 2020" (Murphy, et al, 2006). Another recommendation made by ACCP is that students considering a career in academia also be required to complete residency training, specifically those student pharmacists seeking positions as adjunct clinical faculty members or

preceptors (Murphy, et al, 2006). For academicians seeking full-time positions as assistant clinical professors, ACCP recommends these individuals complete at least two years of residency training (Murphy, et al, 2006). ASHP also set forth a vision for the profession, agreeing that residency training should be required for the health-system pharmacy workforce (ASHP, 2007).

Although the expectation for residency training is one that appears to be on the horizon for the pharmacy profession, it has not yet become the postgraduate decision for the majority of student pharmacists upon graduation. The 2016 Graduating Student Survey conducted by the American Association of Colleges of Pharmacy (AACP) asked graduating student pharmacists to indicate the area in which they intended to pursue upon completion of the Doctor of Pharmacy Degree (AACP, 2016) From this survey, 6,611 of 11,093 (60%) of responding students indicated a plan to work in a community pharmacy, specifically a chain pharmacy, upon graduation compared to 4,024 (36%) who planned to pursue a staff position, likely in a hospital (AACP, 2016). Of the just over 11,000 student respondents, only 2,881 (26%) indicated plans to pursue a postgraduate residency position upon graduation (AACP, 2016).

Pharmacy Residency Competition

Numerous barriers are believed to influence student pharmacists' decision to pursue postgraduate pharmacy residency and will be discussed in detail in a later section. Of these barriers, one of the most prominent is the perception of increased competition among students for the limited number of existing residency positions. From 1990 – 2006, the supply and demand of residency programs was somewhat balanced, creating situations in which competition was not as apparent (McCarthy & Weber, 2013). However, starting in 2007, the demand for

these positions significantly increased, while the supply of positions for applicants did not increase at the same rate, resulting in an increased number of unmatched applicants that would later be left to find positions in an already saturated workforce (McCarthy & Weber, 2013).

Table 2 displays the results from the 2016 ASHP Resident Matching Program (National Matching Service, 2017). As can be seen Table II, approximately one-third of the students who apply to residency programs are not matched. Although multiple reasons for not being placed with a residency position exist, one such reason may be the lack of actual positions compared to the number of applicants pursuing these positions. In the 2016 Match, there were a total of 1,707 programs participating, 1,163 PGY-1 and 544 PGY-2, respectively (National Matching Service, 2017). Following the Match process, a total of 295 programs with 369 positions (including PGY-1 and PGY-2) were left unmatched. When looking at numbers alone, the number of available positions does not provide enough spots for the 1,817 students without a position (National Matching Service, 2017). If the vision of "required residency" is to be a reality, it is clear that an expansion of the number of programs across the country is necessary, including the addition of new programs as well as an increase in the number of residents at existing program sites.

Table II. Summary Results of the Match for Positions Beginning in 2015

Participation			
	PGY1	PGY2	Total
Applicants Participating in the Match	4609	829	5438
Applicants Matched	3041 (66%)	580 (70%)	3621
Participating Applicants Not Matched	1569 (34%)	248 (30%)	1817

*Adapted from https://www.natmatch.com/ashprmp/stats/2016applstats1.html

When considering the Match results presented, one must also be aware that the final data regarding the exact number of students obtaining residency positions are somewhat incomplete due to a variety of factors. First, students may choose to complete residencies which are considered "unaccredited," meaning they have not been registered and formally evaluated by ASHP. Although some of these programs may offer experiences that rival ASHP accredited residencies, they may be new programs or ones in which the proper paperwork and evaluation has not yet been completed. Another reason why the final resident numbers may not be complete is due to the placement process following the Match, known as the Scramble, in which unmatched candidates can contact programs with available positions. This process can also include candidates who did not submit formal rank lists for the Match process and instead decided to only participate in the Scramble. To my knowledge, no formal data has been collected following this process or with regard to unaccredited residencies in order to identify the total number of residents at programs across the country.

In an effort to improve the Match statistics as well as to help aide students in obtaining unmatched positions, ASHP introduced a two-phase Match process for the 2016 cycle (National Matching Service, 2017). This process involved Phase I, which was run in the exact way that the Match has been run in the past. Phase II, however, was new and allowed programs with unfilled positions from Phase I to offer these positions to unmatched applicants in a process that essentially mirrors the first phase (National Matching Service, 2017).

Proposed Residency Expansion

In addition to the implementation of the two phase Match process, other techniques have been proposed to better match the demand for residency positions with the supply. One such

recommendation is an expansion of existing sites to accommodate more residents each year (Clark, 2014). In Clark's "A Vision for the Future of Pharmacy Residency Training," the author suggests that programs create an infrastructure that would allow for expansion to include training for between 25 to 50 residents each year. He does recognize that this would require extensive support from additional personnel and administrative assistants, an area in which most residency programs are currently lacking (Clark, 2014).

Another proposed plan for residency expansion involves the development of a post-graduate year 3 (PGY-3) residency for individuals seeking sub-specialized training in certain highly-specialized areas such as sub-specialties for pediatric and geriatric populations, advanced clinical administrative leadership, nephrology, and specialized ambulatory care clinics such as diabetes and metabolic management (Helling & Johnson, 2014). These third year residencies would be completed following a general first year and a specialized second year with the intention of filling a gap in care in which a highly-trained pharmacist is expected to deliver comprehensive medication management on a patient-centered team in subspecialty areas (Helling & Johnson, 2014).

ADDITIONAL POSTGRADUATE OPTIONS

In addition to residency training, student pharmacists have other options upon completion of the PharmD degree. These options include taking a position in the pharmacy workforce, completion of an additional degree such as an MBA, MS, or PhD, or completion of fellowship training in which they can obtain research experience while also having exposure to the clinical component of pharmacy.

Graduate School

The completion of an additional advanced degree, such as an MBA, MS, or PhD, following completion of the PharmD curriculum is an available option for student pharmacists, but their interest in pursuing this route is minimal. As of fall 2016, graduate programs in pharmaceutical sciences at either the MS and/or PhD levels were available at seventy-nine of the schools and colleges of pharmacy across the country (AACP, 2017). These programs include areas of study ranging from pharmacology and toxicology to health outcomes research and pharmacoeconomics, among many others (AACP, 2015). Also as of fall 2015, only 10.6% of total full-time PhD enrollment, which was 3,086 students respectively, consisted of U.S.-educated pharmacists. This equates to only 2.4% of the total number of first time professional pharmacy degrees awarded for the 2014-2015 academic year, indicating a gap in the number of PharmD graduates pursuing this postgraduate option (AACP, 2017). Barriers to the pursuance of an advanced degree include the additional time commitment beyond what is required for the Doctor of Pharmacy degree, a lack of interest in research, and the evident economic impact associated with delaying a full pharmacist's salary while completing an additional advanced degree (Hagemeier & Murawski, 2011; McElroy, 1985).

Fellowship Training

Another postgraduate option for student pharmacists upon completion of the PharmD degree is pursuance of a fellowship opportunity through either an academic fellowship or an industry fellowship. An academic pharmacy fellowship is defined as "a directed, highly individualized postgraduate training program designed to prepare the participant to function as an independent investigator" (ASHP, 1987). By contrast, an industry fellowship is "a one- or two-year program

designed to prepare the fellow for a career in the pharmaceutical or biopharmaceutical industry (Larochelle, et al, 2009). The industry fellowship allows pharmacists to use the clinical skills and knowledge they have obtained to influence patient health on a broader scale and in more innovative ways (Melillo, et al, 2012). Although the number of these opportunities continues to increase, they are not pursued by the majority of students, possibly due to the lack of clinical exposure and the expectation of research.

Following completion of one of the three postgraduate options (residency, graduate education, or fellowship training), students should be expertly qualified for the majority of positions in the field of pharmacy or pharmaceutical sciences.

EXPOSURE TO POSTGRADUATE PHARMACY OPTIONS

Although information regarding a variety of postgraduate career options is presented to student pharmacists throughout the PharmD curriculum, residency training remains one of the most common postgraduate paths pursued by pharmacy graduates (AACP, 2011). A 2012 study by Hagemeier and colleagues explored the comparative perceived exposure to postgraduate options, including residency, fellowship, and graduate education, and found that junior faculty members were less aware of the alternate options when compared to residency training (Hagemeier & Murawski, 2012).

This perceived lack of exposure to other options could be due to a myriad of reasons including the fact that postgraduate residency training is the option most commonly pursued by pharmacy faculty members who have a great deal of personal influence on students' postgraduate career decisions (McCarthy & Weber, 2013). Also, student pharmacists are likely to have many opportunities for exposure to and preparation for residency training presented in

PharmD curricula throughout the country (Ifeacheor, et al, 2015). A 2015 survey identified a variety of residency information or preparation approaches including elective courses, curricular track programs in research and direct patient care, mock interview sessions, residency showcases, and programming via student organizations, among others (Ifeachor, et al, 2015). Of the 56 schools or colleges of pharmacy providing responses, 43 reported offering advising for students on or after Match Day, particularly for those students who did not match with a residency program (Ifeachor, et al, 2015). These approaches help to support the idea that the postgraduate residency path is one in which many schools and colleges are dedicated to helping their students pursue.

When to Promote

As would be expected, as student pharmacists approach graduation, they begin to think more about their career options and take steps to pursue their desired career path. For most students, this career planning becomes a more focused process during the final year of the Doctor of Pharmacy curriculum (McElhaney & Weber, 2014). Because the final year of the curriculum is the one in which Advanced Pharmacy Practice Experiences (APPEs) take place, students are able to rotate through a variety of practice sites, gaining some experience and exposure to different areas. Examples of these practice areas include the community setting, the hospital/health-system setting, the ambulatory care setting, as well as a variety of elective experiences that help to shape their career interests (McElhaney & Weber, 2014).

Although much of the serious thought about the future happens during the final year of the curriculum, many of the preparation and information activities described in the previous section are available to students throughout the curriculum. (Ifeachor 2015). Some activities may

be reserved exclusively for second and third year students, such as formal elective courses or lectures, but others, such as those promoted by student organizations, were reported as being open to all students regardless of class (Ifeachor 2015). Continued exposure throughout the pharmacy curriculum could have a potential positive impact on the level of preparation students have for postgraduate options upon receiving their PharmD degree.

FACTORS INFLUENCING CAREER CHOICE

With the changing landscape of the pharmacy profession as well as the increased competition among students for postgraduate positions, it is important to identify factors that motivate students to pursue these options as well as barriers that may prevent students from completing additional postgraduate training or experiences.

Motivational Factors

A study by McCarthy and Weber conducted in 2013 aimed to compare factors influencing the decision to pursue postgraduate residency and fellowship experiences with factors identified in a 1995 study (McCarthy & Weber, 2013; Bucci, et al, 1995). This study used the same list of factors as the 1995 study and included survey responses from 857 residents and fellows as well as 65 faculty members (McCarthy & Weber, 2013). Of the 14 factors considered in the study, residents and fellows cited "gain knowledge and experience" (70%), "desire for specialized training" (47%), and "understood as a prerequisite for certain jobs" (43%) as the most important factors influencing their decision to pursue a residency or fellowship (McCarthy & Weber, 2013). Among faculty members, the most important factors cited included "understood as a prerequisite for certain jobs" (54%), "recognition of the new and challenging roles for

pharmacists in the future" (39%), and "faculty stressing importance" (37%) (McCarthy & Weber, 2013). Other motivating factors included topics such as personal interactions and conversations with residents, fellows, role model pharmacists, and fellow students, attending the ASHP Midyear Clinical Meeting, and importance stressed by advisors, current employers, or the school of pharmacy (McCarthy & Weber, 2013).

Since the study was conducted in 2013, other factors have been suggested which were not originally considered by McCarthy and Weber and have not been formally evaluated. These additional factors include the desire of student pharmacists to gain a competitive advantage over their peers, the opportunity to gain qualifications in addition to their doctor of pharmacy degree, such as teaching certificates and post-graduate degrees, and the potential for a flexible program in which experiences could be adapted to their changing interests and career paths (Tai, et al, 2011).

An additional study, conducted by Hagemeier and Murawski (2014) aimed to identify motivating factors associated with pursuing particular postgraduate paths by exploring task-value beliefs. Through an exploratory factor analysis approach, items related to the pursuance of postgraduate training were loaded to one of five factors including intrinsic value, attainment value, utility value, perceived cost, and financial value. Of the items considered, the highest loadings in each category related to motivation included "the challenge of postgraduate work was exciting" (intrinsic value), "I thought that completing postgraduate training would allow me to attain a high sense of self-worth" (attainment value), "I completed postgraduate training because it was required for certain careers I wanted to pursue" (utility value), and "I wanted to complete postgraduate training so I could make more money" (financial value) (Hagemeier & Murawski, 2014).

Studies investigating motivational factors regarding the pursuance of residency training are informative and provide a foundation for considerations made during the decision-making process, however, current literature takes a retrospective approach when determining what motivates pharmacists to pursue pharmacy residencies. An approach utilizing current students who have not yet pursued a career path is warranted to help identify the factors that are influencing real-time decisions for these individuals.

Barriers

In addition to positively-oriented factors associated with the decision to pursue postgraduate training, barriers to this pathway also warrant discussion as they have a significant influence on one's career path. The study referenced in the previous section by Murphy and Weber (2013) included barriers in their analysis of motivating factors associated with the decision of student pharmacists to pursue either postgraduate residency training or fellowship training. Among these barriers, the following were identified by residents and fellows as the most important: "financial obligations" (72%), "a job was available upon graduation" (69%), and "family obligations" (22%). When considering the responses provided by pharmacy school representatives, the barriers most often cited were the same as identified by the residents and fellows (McCarthy and Weber 2013). Other barriers considered included geographical limitations, a lack of emphasis placed on these programs, a lack of readily available information regarding residencies, and the belief that grades or involvement were not good enough to compete for the limited number of residency positions available (McCarthy and Weber 2013). Another potential barrier which has not been formally studied with regard to residency training is the concept of burnout, which has been identified as a likely barrier for students when considering graduate school upon

completion of the PharmD (Gerald, 1988). It is thought that burnout can be attributed to spending a great deal of time in an academic setting which in turn may cause a change in their attitudes toward a future career as well as their goals themselves (Hagemeier, 2010). This information provides support for the fact that although many students consider postgraduate residency training, a variety of factors may be inhibiting them from actually pursuing the opportunity.

FEAR OF MISSING OUT (FoMO)

Among the previously listed influential factors which may be involved in the decision to pursue a postgraduate residency position, one potential factor has yet to be identified in the literature. This potential factor is the Fear of Missing Out, or FoMO, and although it may not be a prominent reason for deciding to follow a particular career path, it may play a role in the decision-making process among student pharmacists when considering career options.

FoMO, a phenomenon most commonly reported in social media related literature, has been defined as "a pervasive apprehension that others might be having rewarding experiences from which one is absent" and is often characterized by "the desire to stay continually connected with what others are doing"(Przybylski, et al 2013). Another definition of FoMO often used in the literature is an "uneasy and sometimes all-consuming feeling that you're missing out – that your peers are doing, in the know about, or in possession of more or something better than you" (JWT, 2011; JWT, 2012). When framed in this context, the majority of young adults have reported experiencing this phenomenon in some context and also experiencing "intense unease when they felt at risk for missing out on positive experiences" (JWT, 2011).

To date, much of the research done regarding this phenomenon has included investigating the potential relationship between FoMO, social media engagement, and learning motivations

(Alt, 2015). The 2013 Przybylski study suggests that FoMO could serve as a mediator between psychological needs identified in the self-determination theory (competence, autonomy, and relatedness) and social media engagement. (Deci & Ryan 1985; Ryan & Deci, 2000; Przybylski 2013). This study showed that FoMO provides signification explanation for social media engagement.

Another study, conducted in 2015, aimed to investigate the relationship between FoMO and social media engagement in the academic setting (Alt, 2015). This study explored the association of FoMO, social media engagement, and learning motivations among students. Previous learning motivation literature has been used to identify an association with the type of motivation present and the choices students make with regard to academic involvement (Linnenbrink & Pintrich 2002; Ratelle, 2007). In addition to these studies, the SDT also provides definitions of intrinsic and extrinsic sources of motivation which can impact the decision-making process. In this regard, intrinsic motivation is considered motivation influenced by internal factors such as enthusiasm or pleasure which may be associated with a task, also identified as being autonomous in nature, is often associated with a more direct and positive connection with a deep approach to learning (Vansteenkiste, 2006). Extrinsic motivation, or controlled motivation, is identified as motivation that is influenced by more extrinsic factors such as obtaining good grades or passing exams and is often associated with more surface processing and less value, effort, and interest shown in the achievement (Ryan and Connell, 1989; Ryan & Deci, 2000). A third type of motivation, described as amotivation, or a lack of motivation, was also explored in the 2015 study by Alt. As described by Deci & Ryan, individuals with amotivation invest little effort toward achievement, may feel detached from their actions, and are not able to readily predict the consequences of their behavior (Deci & Ryan, 1985).

To date, no research has been conducted to identify an association between career choice and FoMO, particularly in the pursuit of residency training among student pharmacists. This study aims to not only further identify motivating factors and barriers associated with the choice to pursue postgraduate pharmacy residency training, but it also aims to highlight the existence of FoMO among this student population and its potential impact on decision-making. By identifying these factors and their potential influence on the decision to pursue residency training, individuals involved in the mentoring of student pharmacists can better aide these students in making informed career decisions. Results of this study may also be used to develop curricular and co-curricular offerings that are more explicitly directed at the factors student pharmacists are using while making these important decisions.

CHAPTER 3

RESEARCH DESIGN

PURPOSE OF RESEARCH

The purpose of this study was to identify influencing factors, including motivators and barriers, which influence postgraduate career decisions among student pharmacists. This study aimed to examine the relationship between how intrinsic and extrinsic motivators influence these decisions. Although research exists examining factors that may be contributing to these choices, the data are limited to a small number of career options and have traditionally not been identified by current students but rather by faculty members or pharmacy residents.

The specific research objectives related to this study are stated below and include:

Objective 1: To identify motivating factors which influence the decision to pursue postgraduate pharmacy residency training among student pharmacists.

Objective 2: To identify barriers which influence the decision not to pursue postgraduate pharmacy residency training among student pharmacists.

Objective 3: To assess the influence of Fear of Missing Out (FoMO) on the decision-making process with regard to pursuance of postgraduate pharmacy residency training among student pharmacists.

These objectives were explored beyond the general level, allowing for comparisons to be made between groups based on demographic identifiers such as year in the professional program, type of campus (medical vs. liberal arts), and intended practice setting.

PRELIMINARY EXPLORATORY RESEARCH

The plan for preliminary exploratory research for this study included conducting personal, in depth interviews with student pharmacists. The purpose of this phase of the research design was to gather information to better understand the factors currently influencing student pharmacists' decision to pursue postgraduate training and to also inform the survey development for the second phase of the study.

Interviews

Prior to survey development, preliminary data was collected through a series of depth interviews with fifteen student pharmacists at the University of Mississippi. This purposive sample was selected to reflect the diversity among the student pharmacists including professional year in school and potential postgraduate interests. Included in this sample were six students currently enrolled in the fourth professional year of the curriculum, four students in the third professional year, four students in the second professional year, and one student enrolled in the first professional year.

The interviews were conducted to further explore the topic of postgraduate training options, to increase the reliability of the questionnaire by providing more guidance with its development, and to reduce respondent misunderstanding of the topics by gaining clarity of the subject content during the interview process. The interview guide utilized during this phase of exploratory research has been provided as Appendix A and includes questions as well as a ranking task.

All interview data was included in the analysis of the interviews except for that of the first-year student whose answers did not align well with the purpose of the study, likely because the student was too early in the curriculum and had not given much thought to postgraduate plans.

Identification of Prior Pharmacy Work Experience

As the initial content-related question, all interviewees were asked if they had experience working in a pharmacy environment. This question was considered important to the purpose of identifying influencing factors which may contribute to postgraduate decisions because a link between experience and exposure to the pharmacy workforce would be expected to have an impact on the student pharmacists' opinions regarding various pharmacy career options. Of the fourteen students included in the interview analysis, only three reported having no formal work experience. For these students, the primary form of exposure to the pharmacy workforce was through either introductory pharmacy practice experiences (IPPEs) or advanced pharmacy practice experiences (APPEs). For the remaining eleven students, the majority reported working in a community environment (n=10) and one student reported having a positon as an intern in an academic medical center. A few students (n=3) reported some exposure to research in pharmacy through summer internship experiences. It is important to note that some students reported exposure to more than one work environment and were counted in all categories mentioned.

"What Comes Next (after Pharmacy School)?"

In this section of the interview, the first question asked of the respondents pertained to the amount of time they currently give thought to "what comes after pharmacy school." As would be

expected, students in their fourth professional year reported spending a considerable amount of time thinking about the immediate future. All six of the fourth-year student pharmacists reported thinking about the "next step" on a daily basis and this was consistent among those students who felt as if they had a good idea of what the "next step" may be and those who may still be debating between options that are of interest.

For students in the second and third professional years of the program, responses varied when asked how much time they spend thinking about the future. For the third-year students, considerable time is devoted to the topic, but because they feel as if the decision is not necessarily imminent, they are less likely to devote daily thought to it. The same can be said about the second-year students although at least one reported spending time doing personal research about options and putting forth effort to make valuable professional connections with individuals in an effort to better prepare for the next step.

Knowledge of Postgraduate Options

Another topic discussed in this section of the interview included information about the student pharmacists' knowledge regarding postgraduate career options. The question was asked in an open-ended format with no prompting regarding the options that may be considered. This was done in an attempt to have students provide the options they most readily remember and could arguably be considered the ones most focused on during pharmacy school. After the initial list was provided by the respondent, the interviewer added additional options to this list in order to facilitate further discussion.

As expected, the main career options identified by the student pharmacists as being possible following graduation included taking positions in community pharmacies, either chain or

independent, taking a position in a hospital pharmacy as a staff pharmacist, or completing a residency with the intention of practicing as a clinical pharmacist in an institutional or ambulatory care setting. A few students recognized the options of careers in academia, veterinary pharmacy, nuclear pharmacy, or the pharmaceutical industry. Very few students mentioned graduate school as a potential option following graduation, of those who did mention it (n=2), it was done so in the context of also completing a simultaneous residency program. Some options not mentioned outright by any of the respondents were completion of a fellowship training program, a career in association management, or careers with government agencies such as the Food and Drug Administration (FDA) or the National Institutes of Health (NIH), although when mentioned by the interviewer, student pharmacists did agree that those options had been mentioned in pharmacy school.

Exposure to Postgraduate Career Options

Another important component of this survey section was the discussion regarding how students felt they were exposed to these options during pharmacy school. This question seemed difficult for students to answer, and many had a hard time identifying structured information systems regarding the multitude of career options available to them upon graduation.

The most common modes of exposure included experiential education (IPPEs for all students and APPEs for the fourth year students) as well as assemblies in which guest speakers were invited to share information about their careers and the paths they had taken to achieving those positions. Experiential education, particularly APPEs, was stated by the fourth-year students as being the most influential when deciding between career options while guest speakers were considered to provide a broad idea to all students of unique options that could be pursued.

Another important mode of exposure mentioned by students was involvement in professional organizations and pharmacy fraternities. Students reported this involvement as a way to network with other students as well as be put in contact with individuals who had pursued paths in which the students were interested. For those involved in leadership within these organizations, this was also stated as a way in which they were better able to "learn what was out there."

Personal interactions and discussion with mentors or other successful pharmacists was also a form of exposure to postgraduate options that students mentioned in the interviews. Many students reported doing their own individual research regarding different options and then identifying people who held similar positions within their networks whom they could reach out to and learn more about their careers. Most students who reported doing this were in the fourth year of the program and had additional modes of exposure to help guide them through the process of individually researching these options.

Exposure through work experiences was stated as a way to learn about at least one career option, and for most students, this was a career in community pharmacy. Although it was not a widely stated "future plan" for many of the respondents, most reported enjoying their work experience and using what they learned to help better inform their own career choices.

Finally, students reported increased exposure to residency training options and subsequent clinical positions while completing their third professional year on the academic medical center campus. During this experience, students are primarily interacting with clinical faculty members who have a varied background with regard to clinical specialties. Students reported that a great deal of their knowledge of residency training can be attributed to conversations or presentations which took place in the clinical environment.

No students reported being exposed to career options during pharmacy school courses or as part of the curriculum, although it is known by the researcher that at least some postgraduate career options are discussed in a variety of classes throughout the first and second professional years of the curriculum. With regard to exposure during the first year, the results of the one interview with a first-year student do support the possibility that these students are appreciative of the exposure but are not in the mindset of making any postgraduate decisions so early in the process and do not commit the exposure to memory.

Postgraduate Intentions Compared to Peers

Although students were asked to identify the three options they felt were most appealing to them, that information will be discussed in the next section regarding postgraduate plans. An important note here, however, is the discussion regarding whether or not student pharmacists felt their postgraduate plans were similar to or different than their peers. The majority of students (n=11) reported feeling as if their plans following graduation with their PharmD were similar to others in their class. Most of these respondents planned on either accepting a position in a community pharmacy or pursuing residency training. One student felt as if she had a different plan because she may be interested in a career involving more research and not necessarily as much clinical exposure. One student reported not having a finalized plan following graduation but potentially being interested in pursuing a career in pharmacy management with or without any clinical exposure. The final student in the group felt as if the immediate plans were in line with fellow classmates, i.e. taking a position in a community practice, but that the long-term plans of possibly completing a managed care residency after a few years of practice were not similar to the postgraduate plans of her peers.

Goal Setting and Postgraduate Plans

When asked about immediate postgraduate career plans, the majority of the respondents stated they were planning on pursuing residency training (n=10). Of the remaining four respondents, three planned on pursuing careers in community pharmacy while one was still undecided as to a career path but did have experience in a research setting which might be a future option.

In terms of goal setting, students were asked to identify both short-term (less than 5 years) and long-term (10 years or longer) goals. Not surprisingly, all respondents listed graduating with their PharmD degrees as a short term goal. Other professional short-term goals included completing the residency search and application process, gaining experience in the pharmacy setting, and becoming confident and capable practitioners. Personal short-term goals included marriage for a few respondents, but the main goal was financial stability with an emphasis on paying off student loans that were incurred during pharmacy school. When considering long-term goals, many respondents reported "having the job that I want" which may or may not include a career change from the initial job choice. Other responses included "having a job where I can use skills I have learned" and jobs with a great deal of patient interaction. Most respondents reported some thought on long-term goals, even if they were not completely clear while two respondents admitted to having no long-term goals at this point, at least not from a professional perspective.

Students were also asked to identify steps they have taken or are currently taking in order to achieve both short and long-term goals. Responses included networking, particularly with professionals who currently hold positions similar to what may be desired by the students, personal exploration of possible career options or sites, and gaining experience through

leadership positions and experiential education. Some students also stated they are taking a proactive approach to the residency search process by contacting programs and visiting these sites well before the application process in order to have more one-on-one experiences.

The final question in this section of the interview asked respondents to identify the point in pharmacy school when they felt like they had a clear idea of what they wanted to do after graduation. Although responses varied, most students identified points earlier in the curriculum than were expected. Of the fourteen responses, nine indicated that "turning point" took place during or before the P2 year, indicating that students may be considering options and making preliminary decisions early in their careers. A few (n=3) students indicated that the moment they realized what they wanted to do occurred during experiential education in the P3 year, and one student identified rotations during the P4 year as the time in which career decisions were made. One student, a P2, stated that the decision had not yet been made and although there were career interests, it was still unclear which career path may be best.

Additional P3/P4 Discussion

During the interviews for P3 and P4 students, a few additional questions were asked in an attempt to identify changes of plans and career motivations over time. Respondents were asked to think back to P1 year and career plans at that time. They were then asked to identify whether or not they felt their career plans have changed since that first professional year of pharmacy school. Not surprisingly, almost all students reported that their career plans have changed, at least somewhat, since their first year. Many students were honest in their responses and stated that they had no idea what they wanted to do when they were P1s. They attributed their change in thinking to learning more about what options are available and being provided with more

information throughout pharmacy school. Although most respondents did report a change, there were a few (n=3) stated that their career plans have not changed due to a clear understanding of their goals before entering into pharmacy school. In terms of a motivational changes over time, many students reported that although their career plans may have changed, their motivations for choosing pharmacy have not changed. There were a few students who stated that their motivations have become clearer and more refined since entering pharmacy school, but the general reason for choosing pharmacy as a career have not changed drastically.

Fear of Missing Out (FoMO)

The last section of the interview focused on the FoMO phenomenon and whether or not students felt like it was an influencing factor about their peers as well as for themselves. Respondents were provided a brief description of FoMO and then asked questions pertaining to its impact on decision making in pharmacy school. When asked if they felt like FoMO was something that influenced pharmacy students in general, on a global level, all respondents stated that yes, they felt like it was a factor in decision-making. This influence was identified in not just career decision-making but also in general decision-making among students. Upon further questioning, students identified specific influences of FoMO which take place during the decision to pursue or not pursue a residency. When identifying influences from those around them, one student stated "they [faculty members, mentors, etc] tell you if you don't apply or don't get one [a residency position], you've missed your chance." Another student responded by saying that you hear "well in order to do this and this job, you have to have a residency. If you don't do a residency, you're limited to this."

One student eluded to the idea that residencies will be a requirement for future jobs and stated that this may be an influencing factor for some students by stating "I have heard people mention that everybody is going to have to do a residency in a couple of years, and if I don't do one now, that's going to hurt me in the future." Other respondents provided insight into more overall thoughts associating FoMO and residency training by stating "most people want to do a residency 'just in case'" and "I know people who say they're going to apply just to see if they match and they say they can always turn it down."

These responses help to support the idea that FoMO is playing a role in some students' decision to pursue residency training. When asked about the influence of FoMO on more of a personal level, the answers were more divided. Of the fourteen respondents, nine stated that FoMO made an impact on their personal decisions while five stated that it did not. For those responding that it did not influence their decision-making process, reasons were attributed to being able to filter out personal goals versus goals that are driven by peer influence as well as the ability to avoid doing things that may not contribute to one's overall career goals.

Motivation Ranking Activity

At the end of the interview, each student was provided with a list of factors which may influence decisions regarding postgraduate career options. Students were asked to read over each factor and identify the three factors which contribute to either their current or future postgraduate decisions. All participants completed this exercise, and a summary of the most influential factors is provided in Table III.

Table III. Most Influential Factors Affecting Postgraduate Decisions

Influencing Factor	Frequency of Selection
Desire to gain knowledge and experience	7
Influence from others	7
Practice setting and/or role	6
Personal interaction with individuals	6
Location	5
Autonomy	3
Competition	2
Financial obligations	2
Time	2
Career Flexibility	2
Availability/accessibility of information	2
Desire to gain confidence	1

These responses indicate that internal factors as well as external factors both play significant roles in the decision-making process. Among the most common internal factors identified are personal desires to gain experience and knowledge while the most common external factors are primarily influence from or interaction with other individuals who may have an impact on experiences or provide exposure that influences career decision making.

MEASUREMENT

Conceptual Frameworks

For this study, the theory of reasoned action (TRA) was used to illustrate the decision making process for student pharmacists. Also underlying this research are the phenomena known

as the Fear of Missing Out (FoMO) and the self-determination theory, both described in the previous chapter.

The theory of reasoned action has been used in a variety of settings to predict behavioral intentions and/or behavior and can be a useful tool when attempting to identify where and how to target strategies for behavioral change. Below is a modified version of the model that was used in this research.

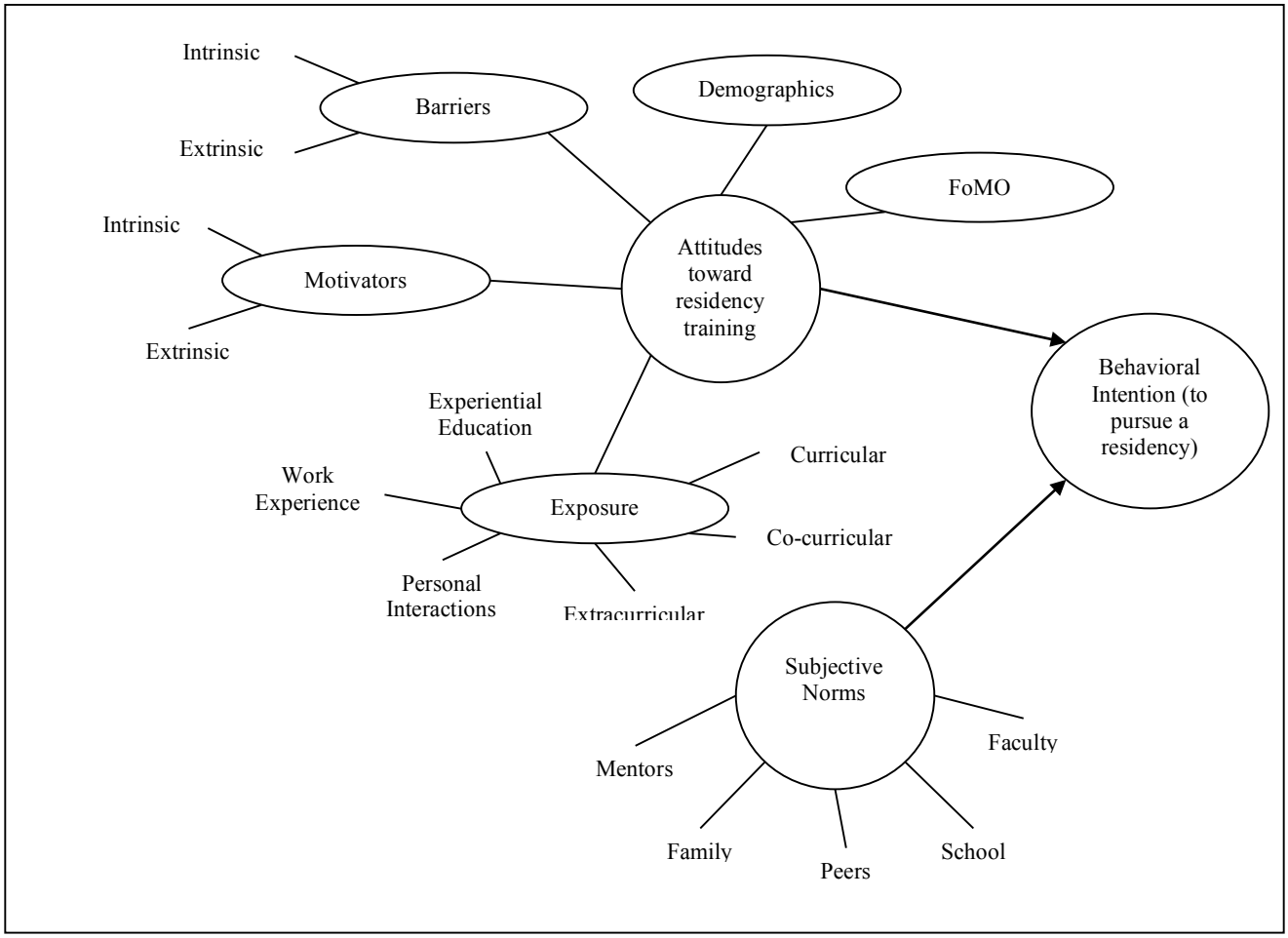

Figure 2. Modified Model of Behavioral Intentions Toward Residency

Operational Definitions

The terms that were measured in this study were "motivational factors" as well as "barriers" associated with the decision to pursue (or not pursue) postgraduate residency training among student pharmacists. For the purposes of this study, the term "motivational factor" was defined as an influencing factor that provided a positive contribution to the decision to pursue residency training. A "barrier" was defined as an influencing factor that served as a reason not to pursue residency training.

In addition to motivators and barriers, this study aimed to identify the contribution FoMO makes to the decision to pursue residency training. The definition of FoMO was provided to respondents and included "a worry that others may be having a rewarding experience and you are not included" and was characterized by "the desire to stay continually connected to what others are doing." FoMO was introduced through survey questions pertaining to the potential influence the actions of others may have on the decision to complete a pharmacy residency.

Operationalization of Variables

To accomplish the research objectives, each concept associated with the proposed model was operationalized as a measurable variable (Singleton & Straits, 2010). The questions used to measure each variable are described in the following paragraphs and can also be found in Appendix B.

Characteristics of the student pharmacist respondents were relevant to all of the research objectives. Specifically, Question 1 regarding the current professional year in school was a critical characteristic used for comparison in each of the three research objectives. In addition to this question, the type of institution/campus for each participating school, although not explicitly

asked in the survey, was also important for comparison. This information was available due to the survey distribution plan in which each institution received an individualized version of the survey.

The focus of research Objective 1, to identify motivating factors which influence the decision to pursue postgraduate pharmacy residency training among student pharmacists, was measured using Question 17. This question asked respondents to identify the level of influence each motivator had in the decision to pursue postgraduate pharmacy residency training. A 7-point rating scale was used for measurement in which 1=little to no influence on the decision and 7=a great deal of influence on the decision. This question was only answered by those individuals who intended to complete a residency upon graduation.

Objective 2, to identify barriers that influence the decision not to pursue postgraduate pharmacy residency training among student pharmacists, was measured using a similar approach as Objective 1. Using Question 18, respondents were asked to identify the level of influence each motivator had in the decision not to pursue postgraduate pharmacy residency training. Again, a 7-point rating scale was used in which 1=little to no influence on the decision and 7=a great deal of influence on the decision. Only respondents indicating they did not plan to complete a residency upon graduation were asked to complete this question.

Objective 3, to assess the role of Fear of Missing Out (FoMO) on the decision-making process with regard to pursuance of postgraduate pharmacy residency training among student pharmacists, was measured using Question 19. The scale used in this study was an adapted version of a scale developed by Przybylski, which was the first time FoMO was operationalized among a group of students. The ten items in the original scale were adapted and expanded to include 14 items which were aimed at identifying the presence of FoMO among student

pharmacists considering postgraduate career options. Each item was measured using a 5-point scale where 1=not at all true of me and 5=extremely true of me. Respondents were asked to read the list of statements regarding FoMO, and for each statement they were asked to identify the extent to which the statement represented them.

Development of the Survey Instrument

The two primary sources of information considered when developing the survey instrument were the answers provided during the preliminary interviews and information gathered through extensive literature review of factors influencing student pharmacists' decision to pursue postgraduate residency training. The work of McCarthy & Weber (2013) served as the foundation of the survey, as many factors from that instrument were used in the present study, with a few modifications such as omission of factors which may not be applicable and separation of some combined factors. Motivators which were added as a result of the preliminary interviews as well as other literature included the following:

- desire for challenge of postgraduate training
- anticipated job satisfaction
- family or peer pressure
- future financial rewards
- desire for respect given to those with advanced training
- desire for prestige that comes with completion of residency training
- desire for autonomy in my future job
- availability/accessibility of information regarding options
- desire for competitive advantage in the job market

Barriers which were identified via other sources and were subsequently added to the survey used in the current study included the following:

- pharmacy school burnout
- no one really mentored me about residencies
- worried about number of work hours required per week
- worried that advanced training may be too difficult

Question Placement

A seven-page questionnaire was developed and contained well-defined sections to facilitate the ease at which respondents could interpret and complete the questions. Each section included questions with similar content allowing respondents to focus on one particular content area before shifting to another topic. Selection of question structure was done to best address the appropriate study objective, and conditional branching was used where appropriate to allow respondents to only answer questions that were applicable to their individual situations (Alreck and Settle, 2004). Because the survey was distributed in both electronic and paper formats, the structure of the paper document differed slightly. In order to facilitate the branching, respondents were provided with explicit directions and signals to complete or skip certain pages depending on their answers to some questions.

Although some resources recommend clustering all demographic information together and including the section at the end of the questionnaire (Alreck and Settle, 2004), this instrument included this information at the beginning due to the importance of the answers to these

questions in characterizing the respondent pool and providing data for inferences about the respondents themselves.

Other sections of the questionnaire included exposure to postgraduate options, postgraduate career plans, factors influencing the decision of postgraduate plan, and the influence of the Fear of Missing Out (FoMO). These sections were organized in order to facilitate a natural thought process with regard to the topics of interest. Respondents who indicated an intention to complete a pharmacy residency were directed to the section titled "Motivators" in which they answered questions related to this intention. For respondents who indicated no intention to complete a pharmacy residency (in which those who are "undecided" were included), the survey directed them to skip the motivators section and instead complete a section entitled "Barriers" which pertained to reasons for deciding not to pursue residency training. Upon completion of these sections, all respondents answered questions in the FoMO section as these were intended to gauge the influence of this phenomenon among student pharmacists in general, regardless of intention to complete a residency. The last section of the survey was included on a version intended for P4 students only and included information regarding the ASHP Midyear Clinical Meeting and the potential influence of attendance at this meeting. At the very end of the survey, respondents were asked to provide contact information so they could be entered into an incentive drawing.

Nonresponse Considerations

Reduction of Nonresponse Bias

When administering surveys to student pharmacists, some nonresponse was expected and may be attributed to busy schedules among students or a lack of importance placed on survey

participation, particularly those being conducted by someone from another institution. Although nonresponse may be expected, bias can be introduced into the study if the non-observations differ in a systematic way from the observations (Singleton & Straits, 2010). One way to reduce nonresponse bias is to increase the response rate, however it has also been stated that this approach may be "relatively weak" and much of the bias may actual lie in the relationship between the interests of the potential respondents with regard to the survey topics and their likeliness of responding (Alreck & Settle, 2004). In this regard, it is imperative for the researcher to identify variables related to response and attempt to estimate nonresponse and control for its effects (Singleton & Straits, 2010). Strategies included in this study which were aimed at increasing the response rate included the use of face-to-face paper surveys for the majority of respondents, a reminder email for the P4 classes who received the survey link via email, stressing the importance of the study topic to the area of research, and offering an incentive for participation.

For the paper surveys, a higher response rate was expected due to the face-to-face nature of the dissemination. The plan for distribution of these surveys was to have a research colleague at each participating institution provide the survey during a class or meeting to the entire P2 or P3 class in one sitting. Because the survey was designed to take approximately ten minutes to complete, each colleague was able to distribute the surveys and then collect responses upon completion. By using this approach, a higher response rate was achieved.

For the online surveys, the use of email reminders has been identified as an effective way to potentially increase the response rate for a survey study. Approximately one week after the initial invitation for study participation, potential respondents received an email reminder

thanking them for their responses, if they had already been provided, and asked for participation from the remainder of the sample within the timeframe of the survey's availability.

The importance of the research topic was described verbally and was also written at the beginning of the paper survey for those individuals who received the face-to-face distribution. For those individuals who received the emailed survey link, the importance of the research topic and its implications was provided in the initial section of the survey instrument. A description of the future use of this data to possibly influence schools and colleges of pharmacy when designing support systems for students making important postgraduate career choices was provided to all respondents. Also included in the description of the study were the risks and benefits to the respondents, the potential incentive provided for participation, and the Institutional Review Board (IRB) approval information.

Improving Reliability and Validity

Although not formally tested for validity due to the exploratory nature of this study, construction of the survey took into account factors that may contribute to increased reliability and validity of the instrument. A proper introduction of the survey, through the use of a cover letter and initial demographic questions, was used to gain cooperation from the respondent within the initial survey completion. Through an introduction that was well-crafted and was provided effectively, the response rate was increased as well as the reliability and validity (Alreck and Settle, 2004). Also, the design and esthetics of the survey instrument were considered during development in order to increase reliability and validity. Attention was paid to the organization of the sections in order to best guide the respondent through the completion of the survey with minimal confusion. By organizing the survey into distinct, uncluttered sections,

the respondent was able to view the task of answering the questions as easier and was more likely to provide responses (Alreck and Settle, 2004).

The use of clear instructions for survey completion and definitions where appropriate are also methods for increasing instrument reliability and validity (Alreck and Settle, 2004). For the scales included in the survey, definitions were used to help frame the concept for the respondent prior to the completion of that scale. Distinct directions were also provided for each scale in order to orient the respondent to the direction of the scale as well as the category linked to each numerical value presented. Because each scale provided differed in its measurement, care was taken to ensure that respondents were given explicit instruction regarding how to approach measurement of each concept.

Other approaches used to potentially increase reliability and validity and to reduce bias included the use of mutually exclusive and exhaustive categories where appropriate (Alreck and Settle, 2004) and the avoidance of leading questions (Singleton and Straits, 2010). A final approach used to increase reliability and provide face validity to the instrument was the use of pretesting prior to survey launch (Alreck and Settle, 2004), which will be discussed in the next section.

Pretesting the Instrument

Prior to distribution of the finalized survey instrument, a draft version was presented to a group of individuals for critique. The purpose of pretesting the instrument was to determine if the questions being asked were clear and easy to understand. The pretesting phase included a convenience sample of past residents and faculty members who had familiarity with the content of the survey but were not included in the sample used in the study. Comments for individuals

who lived out-of-town were received via one-on-one conversations while comments of those within close proximity of the study institution were collected via a focus group format. Because a mixed-mode approach was used for this survey, those involved in pretesting completed both the paper survey as well as the online survey. They were asked to identify clarity issues in the instructions as well as the questions themselves. They were also asked to provide comments on the flow of the document and the usefulness and applicability of each section of the survey instrument. Constructive comments were incorporated into the final version of the survey.

SAMPLING

Population and Study Sample Selection

As previously stated, there are currently 136 schools and colleges of pharmacy in the United States. Of these, a variety of campus structures exist including 0-6 year programs, programs in which all but the final year are located on a liberal arts campus, programs with a split-campus structure in which students spend a portion of pharmacy school on an undergraduate liberal arts campus and then the remainder of pharmacy school on a medical campus, and programs located entirely on medical campuses. For this study, this source of variation in the population was considered important and resulted in the use of a purposive sampling design (Singleton & Straits, 2010). This variation was taken into account when selecting the schools and colleges of pharmacy included in the small sample of four institutions. The institutions, as well as their structure, which were selected for inclusion are listed below:

- The University of Mississippi School of Pharmacy – split campus
- Northeast Ohio Medical University College of Pharmacy – medical campus

- Butler University College of Pharmacy – private liberal arts campus with a 0-6 year program
- Lipscomb University College of Pharmacy and Health Sciences– private liberal arts college campus

From the chosen schools and colleges of pharmacy, only students in their second, third, or fourth professional years of the pharmacy program were considered for inclusion in the study. Based on the preliminary research results, first year student pharmacists were not chosen for this study because they were considered to be too early in the formal pharmacy education process and had put little consideration into postgraduate training, education, or career options.

DATA COLLECTION AND PROCESSING

To help with future data analysis and comparison, each participating school received a version of the survey specifically identifying their institution (ie, each survey was labeled with a two-letter code which identified the school). This helped to organize responses and make future comparisons between the responding schools.

Surveys were distributed via an in-person, paper survey to all P2 and P3 respondents in the sample, while surveys for all P4 respondents were distributed via Qualtrics® Online Survey Software. The reason for a multi-mode distribution was to potentially increase response rate among the students still engaged in the didactic curriculum by providing a face-to-face survey. For P4 students, who were likely to be engaged in experiential education rotations at a variety of sites across their respective states, distribution of a paper survey was not feasible and an electronic medium was more appropriate.

Survey distribution began in March 2016. The paper surveys were provided by a research colleague at each school or college of pharmacy and all responses for that individual class (P2 or P3) at each institution were collected at one time point. For P4 respondents, the online survey was active for two weeks and all potential respondents received an email reminder regarding participation approximately one week after the initial participation request.

Paper surveys were collected by the personal research contact at each respective school and were returned to the primary researcher for data analysis and storage. All online survey data were collected electronically and was stored on the online Qualtrics® server. Prior to analysis, data from both sources was combined and responses were reviewed in order to identify missing data or inappropriate responses as well as to organize and code free-text responses.

DATA ANALYSIS PLAN

Analysis was performed using SPSS for Windows, Version 22. Descriptive statistics were performed on demographic variables to describe the sample of respondents. Subsequent analysis was performed with regard to each individual objective and using specific sets of data and are identified below. Cronbach's alpha was used to measure the reliability of the FoMO scale.

Objective 1: To identify motivating factors which influence the decision to pursue postgraduate pharmacy residency training among student pharmacists.

$H_{1a}o$: The most highly influential motivating factors will not differ based on year of the professional curriculum (P2, P3, P4).

$H_{1b}o$: The most highly influential motivating factors will not differ based on type of institution/campus (medical center campus, liberal arts campus).

$H_{1c}o$: The most highly influential motivating factors will not differ based on intended practice setting.

The first question posed to be answered was "what are the most highly influential motivators among student pharmacists intending to pursue postgraduate pharmacy residency training?" This was addressed by examining the ratings provided for each of the factors listed in the "Motivators" section (Question 17). Mean rating scores were calculated for each of the motivators and based on these ratings, and the motivators were ranked in order to identify the "top motivators". Each of three comparisons were then completed to identify if differences were present between groups in the sample. To make this determination, the mean values for the motivators were compared using independent group t-tests. These tests were used to answer the questions "do the most highly influential motivating factors differ between students in pharmacy school on a medical center campus versus those students on a liberal arts campus?" and "do the most highly influential motivating factors differ between students intending to pursue community pharmacy versus those intending to pursue institutional practice?" To answer the question "do the most highly influential motivating factors differ between students in the P2, P3, and P4 years of the curriculum?" the test for analysis of variance or ANOVA was used.

Objective 2: To identify barriers which influence the decision not to pursue postgraduate pharmacy residency training among student pharmacists.

$H_{2a}o$: The most highly influential barriers will not differ based on year of the professional curriculum (P2, P3, P4).

$H_{2b}o$: The most highly influential barriers will not differ based on type of institution/campus (medical center campus, liberal arts campus).

$H_{2c}o$: The most highly influential barriers will not differ based on intended practice setting.

The questions posed by Objective 2 was answered in a very similar manner as the questions posed in Objective 1. The questions associated with Objective 2 included:

1. What are the most highly influential barriers among student pharmacists not intending to pursue postgraduate pharmacy residency training?
2. Do the most highly influential barriers differ between students in pharmacy school on a medical center campus versus those students on a liberal arts campus?
3. Do the most highly influential barriers differ between students intending to pursue community pharmacy versus those intending to pursue institutional practice?"
4. Do the most highly influential barriers differ between students in the P2, P3, and P4 years of the curriculum?

Again, independent t-tests were used to address the questions 1, 2, and 3 while ANOVA was used to address question 4 above.

Objective 3: To assess the influence of Fear of Missing Out (FoMO) on the decision-making process with regard to pursuance of postgraduate pharmacy residency training among student pharmacists.

$H_{3a}o$: The influence of FoMO will not differ based on year of the professional curriculum (P2, P3, P4).

$H_{3b}o$: The influence of FoMO will not differ based on type of institution/campus (medical center campus, liberal arts campus).

$H_{3c}o$: The influence of FoMO will not differ based on intended practice setting.

The first question posed by Objective 3 was "what role does FoMO play when deciding whether or not to pursue pharmacy residency training?" This question was answered using descriptive statistics in which a mean "FoMO score" was calculated for each respondent by averaging across all 14 items. These scores were then averaged to provide an overall "FoMO score" indicating the potential influence provided by this phenomenon. Comparisons were also made between groups with regard to the FoMO scores and are similar to the comparisons made in the previous objectives. The influence of FoMO was compared between respondents in the different years of the curriculum (P2, P3, and P4) using ANOVA, while the comparisons between the campus settings as well as the intended practice settings were each made using independent t-tests, respectively. Additional measurement using logistic regression was conducted in order to predict residency intention by student pharmacists using average FoMO score as the predictor variable.

Although not formally hypothesized, other valuable comparisons based on demographic information were made in the context of FoMO. These included comparisons of FoMO scores between males and females, comparisons based on age categories and comparisons based on whether or not respondents have experience working in a pharmacy environment. When comparing the FoMO scores among males and females as well as scores between those individuals with and without work experience, independent t-tests were used. ANOVA was used to compare FoMO scores among individuals in different age categories. Another valuable comparison which was considered was the use of social media among respondents. Frequencies of total social media use (checking and posting) was established and the means of these uses were compared using t-tests when two groups are being compared. ANOVA was again used when three or more groups were being compared.

CHAPTER 4

DATA ANALYSIS AND RESULTS

RESPONSE RATE

Using a mixed mode approach, a total of 1130 survey instruments were distributed. This included 799 paper surveys which were handed out during class periods at each of the four respective schools as well as 331 which were distributed via email as a link to the online Qualtrics survey. From this sample, a total of 870 completed surveys were received (73.9%). This included 652 paper survey responses (81.6%) and 218 online survey responses (65.9%).

A large number of the paper surveys (147) were returned without any questions answered, indicating that students may have either been absent from class on the day the survey was administered, despite instructors choosing a well-attended course, or they chose not to participate. For the online surveys, 113 potential respondents did not answer the survey which is not uncommon among students when asked to complete an online survey. Possible reasons include forgetting about the opportunity, not reading emails, choosing not to participate, or possibly having the incorrect email addresses in the database so the survey link was never received by the intended student.

Of the 870 completed surveys, 833 were determined to be usable. One paper survey was excluded from consideration because the respondent failed to provide answers to the motivators, barriers, and Fear of Missing Out (FoMO) sections, which are associated with the main outcomes of the study. For the remaining excluded surveys (36), they were all online submissions and were

excluded due to incomplete responses. These surveys only included the demographic information and did not have responses for the motivators, barriers, or FoMO sections and could not be included in the analysis needed for the main objectives of the study. The 833 remaining surveys represented a response rate of 73.7% based on enrollment numbers at each institution (n = 1130).

DESCRIPTION OF RESPONDING SAMPLE

The majority of the respondents were female students (66%) and white/Caucasian (85%), with an average age of 24 years. These demographics are similar to the overall pharmacy student population which is also majority female and white/Caucasian (AACP, 2016). Among the four schools included in the sample, most respondents were in the second professional year (P2) of the pharmacy curriculum. More detailed descriptions of the respondent sample can be found in Tables III, IV, and V. The percentages reported in these tables represent percentages of total responses to each question and do not equal the total number of questionnaires received (n=833) due to missing information for some responses.

TABLE III. DEMOGRAPHIC INFORMATION FOR REPSPONDING SAMPLE		
GENDER		
Male	n=281	(34.2%)
Female	n=540	(65.8%)
AGE	mean	24.5 years
21-25	n=649	(78.4%)
26-30	n=138	(16.7%)
31-35	n=29	(3.5%)
36 years or older	n=12	(1.4%)
ETHNICITY		
White/Caucasian	n=706	(85.4%)
Black/African American	n=22	(2.7%)
Hispanic/Latino	n=5	(0.6%)
Native American/American Indian	n=2	(0.2%)
Asian/Pacific Islander	n=67	(8.1%)
Other	n=25	(3.0%)
YEAR IN SCHOOL		
P2	n=352	(42.3%)
P3	n=299	(35.9%)
P4	n=182	(21.8%)
INSTITUTION		
University of Mississippi	n=199	(23.9%)
Lipscomb University	n=155	(18.6%)
Butler University	n=294	(35.3%)
Northeast Ohio Medical University	n=185	(22.2%)
INSTITUTION TYPE		
Medical center campus	n=384	(46.1%)
Liberal arts campus	n=449	(53.9%)

Age was collected as absolute numerical data (see Question 2, Appendix B), but collapsed into 4 categories for subsequent analysis. The categories were defined as "21 – 25 years of age," "26 – 30 years of age," "31 – 35 years of age," and "36 years or older." These bounds were set based on the desire to categorize as "early twenties/thirties" versus "later twenties/thirties" as these could be considered younger vs. older students.

Another topic of great interest was students' experience with the pharmacy profession through formal training such as Introductory Pharmacy Practice Experiences (IPPEs) and Advanced Pharmacy Practice Experiences (APPEs) as well as through pharmacy work

experience. Both exposures to the profession can have an influence on perceptions of residency training and future career aspirations. For this reason, a self-reported experience in both experiential education and the work setting was collected. All student respondents had completed some level of experiential education, although the amount of completion varied depending on year in the professional program. As expected, those in the final year of the program had considerably more experiential education experience as a result of APPE rotations.

For work experience, the majority of students (90.4%) reported having worked in a pharmacy setting, with the chain community setting being the most common (47.7%). Many students (35.8%) also reported having experience working in a combination of settings, such as community and hospital. With respect to time, the chain community setting also experienced the lengthiest employment with an average of 31.3 months, the average amount of time worked in each setting can be seen in Table IV.

Other potential areas of exposure which may influence residency training perceptions included personal relationships. Of particular interest were exposures to family members who are pharmacists or mentors who have completed residency training. When asked about these exposures, the majority of students (81.9%) reported that they did not have a family member who is a pharmacist. With regard to mentorship, almost half the students reported having a mentor with residency experience, but among the half not reporting this exposure, it was unclear if those students did not have a mentor in general or just not one with a residency background.

TABLE IV. PHARMACY EXPERIENCE & INFLUENCE IN RESPONDING SAMPLE		
PHARMACY WORK EXPERIENCE		
Yes	n=751	(90.3%)
No	n=80	(9.7%)
PHARMACY WORK EXPERIENCE: SETTING		
Community Pharmacy (chain)	n=357	(47.7%)
Community Pharmacy (independent)	n=67	(9.0%)
Hospital Pharmacy	n=32	(4.3%)
Combination of Experiences	n=268	(35.8%)
Other	n=24	(3.2%)
PHARMACY WORK EXPERIENCE: TIME (months)		
Community Pharmacy (chain)	31.3	
Community Pharmacy (independent)	24.8	
Hospital Pharmacy	17.0	
PHARMACIST FAMILY MEMBERS		
Yes	n=150	(18.1%)
No	n=680	(81.9%)
MENTOR WITH RESIDENCY EXPERIENCE		
Yes	n=382	(47%)
No	n=431	(53%)

Social media usage patterns were also considered important when evaluating the study sample because of the study concept, the Fear of Missing Out (FoMO). The majority of students (93.6%) reported using Facebook, which was expected as Facebook is the largest social media outlet and has over 1.5 billion users logging in at least monthly (Facebook, 2015). Other outlets used most frequently among students included Snapchat and Instagram. See Table V for more details. When considering which platforms were utilized, respondents were instructed to "choose all that apply" resulting in many students choosing more than one social media platform and allowing for percentages that were over 100%.

When asked about the extent of their social media usage, students reported spending an average of just over one hour per day on social media and checking their social media outlets an average of almost 12 times per day. The number of posts among these students, however, was

significantly less at just over 3 posts per week, indicating that students spend more time "browsing" social media than actually posting on the sites.

TABLE V. SOCIAL MEDIA USAGE (n=816)		
	Total mentions and %[a]	
SOCIAL MEDIA OUTLETS		
Facebook	781	(95.7%)
Snapchat	572	(70.1%)
Instagram	512	(62.7%)
LinkedIn	360	(44.1%)
Twitter	306	(37.5%)
Other	36	(4.4%)
TIME SPENT ON SOCIAL MEDIA (Minutes per day)	Average (SD) 66.4 (54.4)	
CHECKING SOCIAL MEDIA (Checks per day)	Average (SD) 11.8 (16.7)	
POSTING ON SOCIAL MEDIA (Posts per week)	Average (SD) 3.3 (9.6)	
[a]Percentage may total more than 100% due to multiple responses		

Throughout the pharmacy school curriculum, various opportunities to learn more about postgraduate career options may exist. These exposures vary from institution to institution and may play a role in the decision-making process with regard to career. When asked about these exposures, the majority of students reported at least one approach from the seven which were presented. These seven approaches were chosen based on feedback provided during the preliminary interview phase of this study. The most commonly reported form of exposure to postgraduate options reported was through guest speakers, followed by experiential education (IPPEs and APPEs), and coursework, electives, and lectures. The least common form of exposure reported was that which may be encountered through attendance at a professional pharmacy meeting. Experiential education was identified as the most preferred method of exposure among the students. Additional information regarding the types of exposures can be found in Table VI.

TABLE VI. POSTGRADUATE CAREER OPTIONS AND PLANS		
	Total mentions and %[a]	Mentioned as preferred and %[b]
EXPOSURE TO OPTIONS (n=824)		
IPPEs/APPEs	679 (82.4%)	184 (22.3%)
Guest Speaker	709 (86.0%)	115 (14.0%)
Coursework/electives/lectures	617 (74.9%)	91 (11.0%)
Mentor	504 (61.1%)	76 (9.2%)
Work Experience	568 (68.9%)	59 (7.2%)
Professional Pharmacy Meetings	356 (43.2%)	29 (3.5%)
Personal Exploration	526 (63.8%)	9 (1.1%)
Other	7 (0.8%)	
TIMING OF EXPOSURE (n=815)		
Pre-pharmacy	238	(29.2%)
P1	397	(48.7%)
P2	144	(17.7%)
P3	34	(4.2%)
P4	2	(0.2%)
INTENDED PRACTICE SETTING (n=832)		
Community Pharmacy	354	(42.5%)
Hospital Pharmacy	285	(34.3%)
Combination of Roles/Other	94	(11.3%)
Unsure	38	(4.5%)
Ambulatory Care Pharmacy	24	(2.9%)
Industry	21	(2.5%)
Nuclear	8	(1.0%)
Managed Care	7	(0.8%)
INTENTION TO PURSUE RESIDENCY TRAINING (n=833)		
Yes	353	(42.4%)
No	480	(57.6%)
[a]Percentage may total more than 100% due to multiple responses [b]Respondents only permitted to select one "most preferred" option		

Another important factor which was considered in the study was postgraduate career plan, specifically identifying the intended practice setting as well as the intention to pursue a pharmacy residency. When asked about the future career setting in which they saw themselves working, most students reported a desire to work in the community setting, followed closely by those students who intend to work in the hospital setting. Other commonly reported settings

included industry, nuclear pharmacy, and managed care. Many students also indicated the potential for a combination of experiences in their future career, although it was difficult to identify whether they were reporting the list as a career of multiple roles or were listing all potential areas in which they may be interested in working. When asked specifically about the intention to complete a pharmacy residency, the majority of students (57.6%) stated they did not currently plan on pursuing a residency. This number included not only those individuals who do not have that plan, but also those who are undecided as to whether they want to do a residency or not.

Although not directly related to the study objectives, students were asked questions related to their preferences for exposure to postgraduate options including the preferred method as well as when this exposure should take place. Students indicated that that the most preferred method of exposure to postgraduate options is through experiential education (22.3%), which is not surprising as students often feel that this form of "hands on" exposure is most influential in their decision-making process with regard to future careers. Many students feel that their rotations help them to solidify their postgraduate plans, either by exposing them to new options or by providing support for a decision they have already made. The second most popular option for exposure is through guest speakers (14%) and the third was through more curriculum-based methods such as coursework, elective courses, and lectures (11%).

Students were also asked to identify when they felt was the best time to begin exposing students to these postgraduate career options. The options ranged from pre-pharmacy to the final professional year of pharmacy school, and the results of this study show that students think that earlier exposure, even during the first professional year (48.7% of students prefer this early exposure), is better than waiting until they are further along in the curriculum. This finding

seems to be different than what educators may have thought in the past. Instead of withholding the details about the options and waiting until students have completed more of the curriculum, maybe the approach should be to provide early and consistent information about all options available so students can better identify their interests and find a future career that aligns with their goals throughout each phase of their education.

ESTIMATION OF NONRESPONSE BIAS

A true estimate of nonresponse was difficult for this study due to the anonymous mixed-method approach to data collection. Because the distribution and collection of the paper surveys took place simultaneously, it was difficult to discern a difference between the students who completed the survey and those who did not.

EXAMINATION OF RESEARCH OBJECTIVES

Objective 1: To identify motivating factors which influence the decision to pursue postgraduate pharmacy residency training among student pharmacists.

"What are the most highly influential motivators among student pharmacists intending to pursue postgraduate residency training?" A total of 353 (42.4%) students indicated a plan to complete a pharmacy residency upon completion of the doctor of pharmacy program. These students were asked to identify the extent to which each of 23 motivating factors had an influence on their decision to pursue a postgraduate pharmacy residency. The results of this analysis can be found in Table VII.

TABLE VII. RANKING OF MOTIVATORS		
MOTIVATING FACTOR	**MEAN (SD)**	**RANK**
Desire to gain experience (n=353)	6.49 (0.75)	1
Anticipated job satisfaction (n=353)	6.34 (0.92)	2
Desire to gain knowledge (n=353)	6.30 (0.90)	3
Desire for specialized training (n=352)	6.28 (0.95)	4
Desire for competitive advantage in the job market (n=353)	6.09 (1.19)	5
Desire to gain confidence (n=353)	6.04 (1.17)	6
Prerequisite for certain jobs (n=351)	5.99 (1.45)	7
Desire for autonomy in my future job (n=352)	5.85 (1.26)	8
Recognition of new and challenging future pharmacist roles (n=351)	5.84 (1.19)	9
Interaction with role model pharmacists (n=352)	5.50 (1.42)	10
Desire for challenge of postgraduate training (n=352)	5.29 (2.64)	11
Interaction with residents in desired positions (n=352)	5.14 (1.50)	12
Desire to gain employment at a particular institution upon completion of the program (n=351)	4.94 (2.04)	13
Desire for respect given to those with advanced training (n=352)	4.94 (1.79)	14
Availability/accessibility of information regarding residency training options (n=353)	4.94 (1.64)	15
Desire for prestige that comes with completion of residency training (n=353)	4.52 (1.95)	16
School of pharmacy's emphasis of these programs (n=352)	4.51 (1.58)	17
Future financial rewards (n=349)	4.44 (1.94)	18
Talking with fellow students (n=353)	4.41 (1.67)	19
Faculty stressing importance of residency training (n=353)	4.24 (1.70)	20
Advisor stressing importance of residency training (n=353)	3.86 (1.76)	21
Importance stressed by job or employer (n=349)	3.42 (1.89)	22
Family or peer pressure (n=349)	2.18 (1.54)	23
*Measured on a 7-point scale, where 1=little to no influence and 7=great deal of influence and then ranked from "most influential" to "least influential"		

The four motivating factors with the highest mean ratings were identified as "desire to gain knowledge", "anticipated job satisfaction", "desire to gain knowledge", and "desire for specialized training". Of the 23 motivating factors considered by the respondents, all but three had scores that placed them above the "neutral" point which was a score of 4.

To answer the question “do the most highly influential motivators differ between students in pharmacy school on a medical center campus versus those students on a liberal arts campus?” an independent samples t-test was performed for each motivator. As seen in Table VIII, there was no significant difference in motivators among students on each type of campus except for one. The only significant difference was seen when evaluating the motivator “talking with other students” ($p=0.032$), indicating more of an influence with this motivator among those students on a liberal arts campus versus those on a medical center campus.

TABLE VIII. DIFFERENCE IN MOTIVATORS AMONG TYPE OF PHARMACY SCHOOL CAMPUS					
Motivator	Medical Center Campus (n=168)		Liberal Arts Campus (185)		*p*
	Mean	SD	Mean	SD	
Desire to gain experience	6.51	0.82	6.47	0.69	0.658
Anticipated job satisfaction	6.24	0.96	6.42	0.88	0.073
Desire to gain knowledge	6.35	0.88	6.25	0.91	0.311
Desire for specialized training	6.18	1.03	6.36	0.86	0.073
Desire for competitive advantage in the job market	6.08	1.20	6.10	1.19	0.879
Desire to gain confidence	6.13	1.15	5.96	1.20	0.176
Prerequisite for certain jobs	5.96	1.54	6.01	1.37	0.734
Desire for autonomy in my future job	5.78	1.33	5.90	1.20	0.381
Recognition of new and challenging future pharmacist roles	5.73	1.31	5.94	1.05	0.095
Interaction with role model pharmacists	5.39	1.56	5.60	1.27	0.179
Desire for challenge of postgraduate training	5.36	3.51	5.23	1.45	0.653
Interaction with residents in desired positions	5.10	1.48	5.19	1.52	0.576
Desire to gain employment at a particular institution upon completion of the program	5.02	1.99	4.87	2.09	0.480
Desire for respect given to those with advanced training	4.88	1.86	5.00	1.72	0.531
Availability/accessibility of information regarding residency training options	4.85	1.59	5.01	1.68	0.362
Desire for prestige that comes with completion of residency training	4.39	2.04	4.64	1.85	0.238
School of pharmacy's emphasis of these programs	4.57	1.60	4.46	1.56	0.539
Future financial rewards	4.63	1.92	4.27	1.95	0.084
Talking with fellow students	4.21	1.67	4.60	1.65	**0.032****
Faculty stressing importance of residency training	4.30	1.73	4.18	1.68	0.510
Advisor stressing importance of residency training	4.07	1.81	3.66	1.70	0.30
Importance stressed by job or employer	3.51	2.00	3.33	1.79	0.377
Family or peer pressure	2.07	1.49	2.27	1.59	0.234
*Measured on a 7-point scale, where 1=little to no influence and 7=great deal of influence ** $p < 0.05$					

To answer the question "do the most highly influential motivators differ between students who intend to practice in a community setting versus a hospital setting upon graduation?" an independent samples t-test was performed for each motivator. Table IX shows that for most motivating factors, no difference existed among students with intentions to work in the community versus hospital settings. A significant difference was seen, however, when evaluating the motivating factors "recognition of new and challenging future pharmacist roles" ($p=0.008$) and "future financial rewards" ($p=0.047$). In both comparisons, students intending to practice in the community setting displayed higher mean scores for the significant motivators.

TABLE IX. DIFFERENCE IN MOTIVATORS AMONG INTENDED PRACTICE SETTINGS[a]					
Motivator	Community Setting (n=10)		Hospital Setting (n=256)		*p*
	Mean	SD	Mean	SD	
Desire to gain experience	6.50	0.71	6.52	0.70	0.917
Anticipated job satisfaction	6.40	0.84	6.40	0.87	0.993
Desire to gain knowledge	6.40	0.84	6.34	0.88	0.822
Desire for specialized training	6.00	0.94	6.33	0.93	0.279
Desire for competitive advantage in the job market	6.30	1.57	6.13	1.13	0.638
Desire to gain confidence	5.90	1.29	6.09	1.17	0.615
Prerequisite for certain jobs	5.60	2.07	5.95	1.52	0.489
Desire for autonomy in my future job	6.50	0.97	5.82	1.23	0.084
Recognition of new and challenging future pharmacist roles	6.40	0.51	5.84	1.17	****0.008**
Interaction with role model pharmacists	5.30	1.70	5.55	1.43	0.598
Desire for challenge of postgraduate training	5.50	1.35	5.45	2.95	0.955
Interaction with residents in desired positions	4.90	1.73	5.25	1.41	0.449
Desire to gain employment at a particular institution upon completion of the program	4.56	1.94	4.91	2.11	0.624
Desire for respect given to those with advanced training	5.20	2.15	5.09	1.72	0.839
Availability/accessibility of information regarding residency training options	4.80	2.10	4.97	1.61	0.748
Desire for prestige that comes with completion of residency training	5.40	2.07	4.67	1.90	0.234
School of pharmacy's emphasis of these programs	5.30	1.83	4.48	1.57	0.109
Future financial rewards	5.60	1.90	4.35	1.95	****0.047**
Talking with fellow students	4.80	1.87	4.38	1.68	0.434
Faculty stressing importance of residency training	5.00	2.16	4.25	1.70	0.178
Advisor stressing importance of residency training	4.70	2.16	3.79	1.76	0.115
Importance stressed by job or employer	3.60	2.50	3.48	1.89	0.847
Family or peer pressure	3.20	1.81	2.13	1.52	0.032
*Measured on a 7-point scale, where 1=little to no influence and 7=great deal of influence ** $p < 0.05$					

The final comparison made with regard to the motivators answers the question "do the most highly influential motivators differ between students in different years of the professional pharmacy program?" This was done using an ANOVA, and significant differences were seen among some motivators when compared across the different classes. The results of this comparison can be found in Table X. Of particular interest was the difference seen in the motivator "future financial rewards" which was statistically significant (p<0.0005). Other statistically significant differences were seen among the following motivators: "desire to gain knowledge" (p=0.009), "desire to gain confidence" (p=0.010), "desire to gain employment at a particular institution…" (p=0.004), "desire for respect given to those with advanced training" (p=0.04), "availability/accessibility of information regarding residency training options" (p=0.014), and "importance stressed by job or employer" (p=0.007).

Upon post-hoc analysis using the Tukey's HSD method, the difference between classes was seen when comparing students in the fourth year of the professional curriculum against those in each the second and third years, respectively. This pairwise comparison revealed that for the motivators "desire to gain knowledge" and "desire to gain confidence" a higher score was provided by the fourth-year students compared to the third and second year students. For all other significant differences, the second-year students provided a higher score when compared to the fourth-year students. This included "desire to gain employment", "availability/accessibility of information", "desire for respect", "importance stressed by employer", and "future financial rewards."

Among those motivators that did not show a statistical difference among classes were outside influences such as faculty members and advisor stressing the importance of residency training, family or peer pressure, or emphasis placed by the school of pharmacy. Interactions

between students and role model pharmacists or residents in desired positions also lacked significance when compared across the three classes.

TABLE X. DIFFERENCE IN MOTIVATORS AMONG YEAR IN PROFESSIONAL PROGRAM					
		Means by Year			
Motivator	F	P2	P3	P4	*p*
Desire to gain experience	1.57	6.43	6.48	6.61	0.210
Anticipated job satisfaction	0.80	6.40	6.31	6.27	0.449
Desire to gain knowledge	4.81	6.18	6.28	6.56	****0.009**
Desire for specialized training	2.94	6.39	6.27	6.07	0.054
Desire for competitive advantage in the job market	0.59	6.13	6.15	5.95	0.55
Desire to gain confidence	4.68	5.83	6.15	6.31	****0.010**
Prerequisite for certain jobs	0.64	5.99	6.10	5.82	0.528
Desire for autonomy in my future job	0.85	5.90	5.75	5.89	0.428
Recognition of new and challenging future pharmacist roles	0.22	5.85	5.80	5.85	0.801
Interaction with role model pharmacists	1.49	5.44	5.42	5.72	0.228
Desire for challenge of postgraduate training	0.39	5.35	5.14	5.40	0.678
Interaction with residents in desired positions	0.04	5.12	5.15	5.17	0.962
Desire to gain employment at a particular institution upon completion of the program	5.49	5.22	5.01	4.31	****0.004**
Desire for respect given to those with advanced training	3.24	5.17	4.87	4.57	****0.040**
Availability/accessibility of information regarding residency training options	4.34	5.17	4.92	4.51	****0.014**
Desire for prestige that comes with completion of residency training	3.01	4.78	4.40	4.18	0.051
School of pharmacy's emphasis of these programs	1.09	4.36	4.66	4.59	0.338
Future financial rewards	10.16	4.86	4.40	3.68	****<0.0005**
Talking with fellow students	1.32	4.51	4.47	4.15	0.269
Faculty stressing importance of residency training	2.52	4.01	4.50	4.32	0.082
Advisor stressing importance of residency training	0.21	3.79	3.96	3.85	0.811
Importance stressed by job or employer	5.04	3.69	3.44	2.88	****0.007**
Family or peer pressure	1.66	2.34	2.03	2.07	0.191
*Measured on a 7-point scale, where 1=little to no influence and 7=great deal of influence ** $p < 0.05$					

Objective 2: To identify barriers which influence the decision not to pursue postgraduate pharmacy residency training among student pharmacists.

"What are the most highly influential barriers among student pharmacists not intending to pursue postgraduate pharmacy residency training?" A total of 480 students (57.6%) indicated an intention to not pursue a postgraduate pharmacy residency. For these students, a list of 20 barriers was presented and respondents were asked to identify the extent to which each barrier influenced their decision not to pursue residency training. This influence was evaluated using a 7-point scale, and the ranking for each barrier can be found in Table XI.

The most influential barriers identified by the respondents included "a job was available to me without extra training", "delay of salary", "student loan debt", and "pharmacy school burnout". For this ranking, the majority of the barriers were scored at or below the "neutral" mark, with only four barriers receiving an average score greater than 4.

TABLE XI. RANKING OF BARRIERS		
BARRIERS	**MEAN (SD)**	**RANK**
A job was available to me without extra training (n=476)	5.42 (1.83)	1
Delay of salary (n=478)	5.35 (1.80)	2
Student loan debt (n=478)	5.12 (2.14)	3
Pharmacy school burnout (n=476)	4.77 (2.06)	4
Family obligations (n=478)	3.64 (2.23)	5
Worried about number of work hours required per week (n=477)	3.50 (2.10)	6
Geographic limitations (n=477)	3.31 (2.15)	7
Too competitive in my geographical area (n=478)	2.95 (1.91)	8
Grades are not good enough to qualify for a residency position (n=476)	2.94 (1.96)	9
Individuals advising that residencies are not necessary (n=478)	2.92 (1.78)	10
Feeling unprepared (n=478)	2.83 (1.79)	11
Fear of not matching (n=477)	2.77 (1.99)	12
Too competitive in my clinical area of interest (n=477)	2.59 (1.75)	13
No one really mentored me about residencies (n=478)	2.59 (1.81)	14
Information about the application and "matching" process is not readily available (n=478)	2.50 (1.68)	15
Afraid of competition (n=477)	2.49 (1.78)	16
Worried that advanced training may be too difficult (n=475)	2.42 (1.64)	17
Information about residency options is not readily available (n=476)	2.13(1.49)	18
Timing of programs to inform us was not convenient (poor attendance) (n=476)	2.11(1.51)	19
Residencies are not really emphasized at my school (n=478)	1.78(1.19)	20
*Measured on a 7-point scale, where 1=little to no influence and 7=great deal of influence and then ranked from "most influential" to "least influential"		

To answer the question "do the most highly influential barriers differ between students in pharmacy school on a medical center campus versus those students on a liberal arts campus?" a t-test was used and identified significant differences with a few barriers. Of particular interest were the barriers "pharmacy school burnout" which was ranked as more influential by students on the medical center campus as well as "grades are not good enough…" which was ranked as

more influential by students on the liberal arts campus. Other differences included “individuals advising that residencies are not necessary”, which was reported as more influential by students on the medical center campus, a “greater fear of competition” among students on the liberal arts campus, and “information about residency options is not readily available” ranked higher by respondents on the liberal arts campus.

TABLE XII. DIFFERENCE IN BARRIERS AMONG TYPE OF PHARMACY SCHOOL CAMPUS					
Barrier	Medical Center Campus (n=215)		Liberal Arts Campus (n=263)		*p*
	Mean	SD	Mean	SD	
A job was available to me without extra training	5.51	1.81	5.35	1.84	0.322
Delay of salary	5.44	1.75	5.28	1.85	0.322
Student loan debt	5.19	2.17	5.10	2.11	0.538
Pharmacy school burnout	5.13	1.92	4.47	2.12	**<0.0005
Family obligations	3.75	2.27	3.56	2.20	0.355
Worried about number of work hours required per week	3.60	2.14	3.43	2.07	0.373
Geographic limitations	3.44	2.21	3.21	2.09	0.241
Too competitive in my geographical area	2.77	1.82	3.10	1.96	0.068
Grades are not good enough to qualify for a residency position	2.47	1.76	3.32	2.04	**<0.0005
Individuals advising that residencies are not necessary	3.15	1.82	2.73	1.73	**0.011
Feeling unprepared	2.78	1.78	2.87	1.81	0.595
Fear of not matching	2.58	1.90	2.92	2.05	0.056
Too competitive in my clinical area of interest	2.45	1.72	2.71	1.76	0.108
No one really mentored me about residencies	2.45	1.83	2.70	1.79	0.135
Information about the application and “matching” process is not readily available	2.36	1.68	2.60	1.68	0.130
Afraid of competition	2.27	1.64	2.66	1.88	**0.016
Worried that advanced training may be too difficult	2.27	1.57	2.54	1.69	0.070
Information about residency options is not readily available	1.96	1.41	2.28	1.54	**0.019
Timing of programs to inform us was not convenient (poor attendance)	2.02	1.47	2.18	1.54	0.251
Residencies are not really emphasized at my school	1.70	1.24	1.84	1.15	0.209
*Measured on a 7-point scale, where 1=little to no influence and 7=great deal of influence ** $p < 0.05$					

When evaluating the question "do the most highly influential barriers differ between students intending to pursue community pharmacy versus those intending to pursue institutional practice?" a t-test was performed and found significant differences among some of the barriers. When comparing the two settings, more students intending to work in the community setting reported that having a job available upon graduation was a reason they did not intend to pursue a residency. Also, those planning on working in the community setting also rated "geographic limitations" as a more influential barrier than those individuals intending to pursue the institutional setting. Of particular interest were the significant differences seen with the barriers "fear of not matching" and "afraid of competition" when comparing the intended settings. Students with community pharmacy intentions rated both barriers as being more influential when compared to those with institutional pharmacy intentions.

TABLE XIII. DIFFERENCE IN BARRIERS AMONG INTENDED PRACTICE SETTINGS					
Barrier	Community Setting (n=342)		Hospital Setting (n=29)		*p*
	Mean	SD	Mean	SD	
A job was available to me without extra training	5.75	1.63	4.90	1.93	**0.008
Delay of salary	5.64	1.58	5.17	1.87	0.135
Student loan debt	5.33	2.06	5.07	2.12	0.508
Pharmacy school burnout	5.07	1.89	4.90	1.97	0.629
Family obligations	3.80	2.21	3.72	2.40	0.864
Worried about number of work hours required per week	3.58	2.13	3.72	2.23	0.735
Geographic limitations	3.49	2.19	2.45	1.80	**0.006
Too competitive in my geographical area	2.94	1.88	3.28	1.87	0.350
Grades are not good enough to qualify for a residency position	2.90	1.91	2.62	1.80	0.452
Individuals advising that residencies are not necessary	2.92	1.77	3.17	1.98	0.459
Feeling unprepared	2.78	1.74	3.00	2.04	0.513
Fear of not matching	2.71	1.93	3.72	2.30	**0.008
Too competitive in my clinical area of interest	2.56	1.71	3.11	1.85	0.105
No one really mentored me about residencies	2.52	1.75	2.72	1.96	0.540
Information about the application and “matching” process is not readily available	2.41	1.61	2.79	1.90	0.302
Afraid of competition	2.49	1.76	3.21	2.04	**0.038
Worried that advanced training may be too difficult	2.46	1.65	2.59	1.94	0.701
Information about residency options is not readily available	2.06	1.40	2.21	1.52	0.580
Timing of programs to inform us was not convenient (poor attendance)	2.12	1.49	2.38	1.66	0.380
Residencies are not really emphasized at my school	1.75	1.19	1.72	1.10	0.895
*Measured on a 7-point scale, where 1=little to no influence and 7=great deal of influence ** $p < 0.05$					

Table XIV shows the results of the ANOVA which was used to answer the question "do the most highly influential barriers differ between students in the P2, P3, and P4 years of the curriculum?" Statistical differences were found among the majority of the barriers when compared across all three classes. Overall, differences were found with respect to how much emphasis students place on delays in salary due to residency training, influence of family obligations, and perceptions regarding availability of information. Differences were also seen among students with respect to fears of not matching, competition, and feeling unprepared. Interesting barriers which were not statistically significant when compared among the classes were pharmacy school burnout and worries about grades.

Post-hoc analysis using Tukey's HSD was again performed in order to identify the specific relationships between the classes as well as the direction of these relationships. In summary, students in the second year of the program provided a higher score for almost all of the barriers for which a statistical difference was shown. For most of these barriers, a statistical difference existed among rating scores between comparisons of both second year students vs. third year students and second year students vs. fourth year students. A few barriers were not rated highly by the second year students but did indicate a higher score from third year students when compared to fourth year students. These barriers included topics such as delay of salary, family obligations, fears of not matching, feeling unprepared, and worries about geographically based competition.

TABLE XIV. DIFFERENCE IN BARRIERS AMONG YEAR IN PROFESSIONAL PROGRAM					
		Means by Year			
Barrier	F	P2	P3	P4	*p*
A job was available to me without extra training	0.40	5.42	5.48	5.30	0.671
Delay of salary	4.11	5.34	5.57	4.96	****0.017**
Student loan debt	1.83	5.16	5.26	4.78	0.162
Pharmacy school burnout	1.95	4.57	5.00	4.78	0.143
Family obligations	6.20	3.65	3.97	3.02	****0.002**
Worried about number of work hours required per week	1.05	3.46	3.40	3.78	0.351
Geographic limitations	1.72	3.24	3.52	3.07	0.180
Too competitive in my geographical area	4.68	3.09	3.08	2.43	****0.010**
Grades are not good enough to qualify for a residency position	2.81	3.11	3.00	2.55	0.061
Individuals advising that residencies are not necessary	2.88	2.77	3.16	2.78	0.057
Feeling unprepared	6.20	2.99	2.95	2.27	****0.002**
Fear of not matching	7.52	2.96	2.92	2.09	****0.001**
Too competitive in my clinical area of interest	6.93	2.88	2.56	2.09	****0.001**
No one really mentored me about residencies	12.93	3.05	2.41	2.01	****<0.0005**
Information about the application and "matching" process is not readily available	12.63	2.72	2.33	1.96	****<0.0005**
Afraid of competition	4.90	2.70	2.52	2.02	****0.008**
Worried that advanced training may be too difficult	4.25	2.62	2.28	2.16	****0.015**
Information about residency options is not readily available	13.15	2.54	1.94	1.72	****<0.0005**
Timing of programs to inform us was not convenient (poor attendance)	8.28	2.45	1.89	1.86	****<0.0005**
Residencies are not really emphasized at my school	7.04	1.99	1.74	1.44	****0.001**
*Measured on a 7-point scale, where 1=little to no influence and 7=great deal of influence ** $p < 0.05$					

Objective 3: To assess the influence of Fear of Missing Out (FoMO) on the decision-making process with regard to pursuance of postgraduate pharmacy residency training among student pharmacists.

"What role does FoMO play when deciding whether or not to pursue pharmacy residency training?" To measure the presence of FoMO in this respondent sample, an adapted version of the FoMO scale created by Przybylski and colleagues was used (Przybylski, 2013). The overall FoMO score was reported as 2.04 (SD=0.72), indicating that on average, students felt that the statements presented to them through this research were only "slightly true" of them. Scores ranged from 1 on the low end to 4.43 on the high end. The highest rated statement included the importance of understanding all potential residency options available in order to be competitive (see Table XV for more details). Other highly rated statements included topics such as involvement during pharmacy school and grades.

TABLE XV. FoMO Scores	
FoMO STATEMENT	**MEAN (SD)**
I fear my peers (students at my school and other schools) have more rewarding pharmacy school careers than me (n=830)	2.06 (1.14)
I fear my peers are more prepared for postgraduate training than me (n=831)	2.29 (1.23)
Compared to my peers, I fear I have not been involved enough in pharmacy school to get a residency (n=830)	2.48 (1.34)
Compared to my peers, I fear my grades are not good enough to get a residency (n=829)	2.41 (1.33)
I get worried when I found out my peers are learning more about residency training than I am (n=828)	1.94 (1.15)
I get anxious when I don't know what my friends are up to with regard to learning more about residencies (n=831)	1.69 (1.04)
It is important that I understand the residency options my friends are considering, in case I may be interested too (n=830)	2.05 (1.13)
It is important to me that I understand all potential residency options available to me so I can be competitive (n=830)	****2.93 (1.40)**
Sometimes I wonder if I spend too much time worrying about residencies (n=827)	1.92 (1.19)
Sometimes I wonder if I spend too much time keeping up with what my friends are planning to do with regard to residencies (n=828)	1.49 (0.87)
It bothers me when I miss an opportunity to learn about residencies (n=829)	1.91 (1.13)
When I miss out on a planned residency interest meeting, it bothers me (n=829)	1.80 (1.11)
When something good happens to me that may be relevant to a future residency, it is important for me to share the details online (n=830)	1.39 (0.79)
Even when I may not be interested in a residency for myself, I continue to keep tabs on what my peers are doing with regard to residency training (n=830)	2.16 (1.17)
Average overall FoMO score (n=831)	**2.04 (0.72)**
*Measured on a 5-point scale, where 1=not at all true of me and 5=extremely true of me ** Highest overall FoMO score	

To answer the question "do FoMO scores differ between students in pharmacy school on a medical center campus versus those students on a liberal arts campus?" a t-test was used and revealed a significant difference in overall average FoMO scores, indicating a higher FoMO score among students on a liberal arts campus ($p < 0.0005$)

TABLE XVI. DIFFERENCE IN FoMO SCORES AMONG TYPE OF PHARMACY SCHOOL CAMPUS					
FoMO Statement	Medical Center Campus (n=383)		Liberal Arts Campus (n=449)		*p*
	Mean	SD	Mean	SD	
Average overall FoMO score	1.90	0.675	2.15	.74176	**<0.0005
** $p < 0.05$					

When comparing FoMO scores among intended practice settings, a t-test was again used to examine the difference between students intending to practice in the community setting versus the hospital setting. A statistically significant difference was seen and indicated that students who intend to practice in the hospital setting had a higher FoMO score than those students intending to practice in the community setting.

TABLE XVII. DIFFERENCE IN FoMO SCORES AMONG INTENDED PRACTICE SETTINGS					
FoMO Statement	Community Setting (n=353)		Hospital Setting (n=285)		*p*
	Mean	SD	Mean	SD	
Average overall FoMO score	1.80	0.64	2.24	0.711	**<0.0005
*individuals intending to work in more than one setting were not included in this analysis ** $p < 0.05$					

FoMO scores were also compared between students in different years of the professional curriculum. ANOVA was used to detect an overall difference, and Tukey's HSD was used post-hoc to identify differences between the classes in pairwise comparisons. Overall, a statistically significant difference was seen when considering the mean FoMO scores among students in different professional years (F=10.361, p= <0.0005). When analyzed further, FoMO scores were higher for second year students (2.14) when compared to third year students (2.03)

and fourth year students (1.85), respectively. A significant difference was not seen between third and fourth year students.

Finally, a logistic regression analysis was conducted to predict residency intention by student pharmacists using average FoMO score as a predictor. A test of the full model against a constant only model was statistically significant, indicating that FoMO score can reliably distinguish between those students who intend to pursue a residency versus those who do not (chi square = 87.62, $p<0.0005$ with df=1). Nagelkerke's R^2 of 0.13 with a classification accuracy of 63% (39.2% for those with residency intentions and 80.6% for those who do not intend to pursue a residency) and a c statistic of 0.689 indicating acceptable discrimination. An odds ratio of 2.62 indicates that for a 1-point increase in FoMO score, the odds of a student intending to pursue a residency increases by 2.6 times.

CHAPTER 5

DISCUSSION AND CONCLUSIONS

LIMITATIONS OF THIS RESEARCH

Issues Related to Response

As might be expected, the response rate for the online version of the survey, which was distributed to the P4 students only, was lower compared to the paper version of the survey instrument. One possible reason for this included the variability in when respondents could complete the online version. Rather than being asked to complete the survey at a specified time, in a class setting, respondents could complete the survey on their own time during the 2-week period the survey was available. This likely decreased the number of students completing the online survey because they could open the email and then either choose to not participate or to close the message, but forget to follow up or complete the survey at a later date. Another possible reason for nonresponse from the online version of the survey was incorrect email address listed in the database that may have prevented the intended students from being presented with the opportunity to complete the survey.

Question Structure

Although the survey included a question regarding the completion of experiential education, the data collected for this question could not be used in the analysis due to confusion with the wording of the question as well as differences in experiential education structure among the

institutions. The wording of the item asked respondents to state how many weeks of experiential education (including IPPEs and APPEs) they had completed to date, although some students reported their experiential education in hours. Due to the differences in how each participating school structures their IPPE and APPE rotations, asking respondents to indicate how many hours, rather than weeks, they had completed might have been a more appropriate approach. The inability to use the data from this question was not discovered until after survey distribution.

Another question that had results that were difficult to interpret was the item regarding intended practice setting. In this item, respondents were asked to identify in which setting they intend to practice upon completion of the PharmD degree. This question included "community pharmacy" and "hospital pharmacy" as the two main answers, as these are the two options most chosen by students, but also allowed respondents to enter an "other" response. Many respondents chose "other" and described a variety of possible settings. Although the responses that included only one setting were not difficult to analyze, the responses that indicated intentions to work in more than one setting made interpretation and analysis more complicated.

Motivators & Barriers

As a result of the study design, respondents were asked to choose whether or not they intended to pursue a pharmacy residency, and based on the answer to this question, they were directed to questions regarding motivators for completing a residency or barriers associated with not completing a residency. In retrospect, an alternative approach would have been to ask all respondents to answer both the motivators and barriers sections. This may have provided a richer data set with regard to the decision-making process associated with postgraduate options. This would have allowed for evaluation of what may have motivated students to choose options other

than a residency as well as barriers that may exist even for students with residency intentions. Another aspect to consider with this alternate approach, however, is respondent burden. It remains to be seen how expanding the instrument to include motivators and barriers for all respondents may have impacted the quality of the answers given due to potential survey fatigue and increased respondent burden.

FOMO Scale Development and Application

The FOMO scale used in this study was adapted from an existing measure (Przybylski, 2013). The existing FOMO scale was developed for use in the computer science domain and focused a great deal on the impact of FOMO in the realm of social media use. To my knowledge, this scale had not been used in other settings. The adaptations made for this study created a scale better suited for use in the pharmacy setting, particularly in the setting of postgraduate career choice. Due to the overall novelty of the scale in general as well as its applicability in pharmacy, limitations existed and may only be decreased with repeated use and further adjustments to improve the ability to account for the presence and influence of FoMO among student pharmacists.

Another potential limitation with the scale is the terminology used with the items. Using the word "fear" could have been a possible limitation because even with an operational definition provided, the term may be associated with numerous connotations. Based on the interpretation of the student, using the word "fear" may have impacted the way they answered the question. For example, students may have a "fear" of something that makes them avoid it. In the context of FoMO, this use of the word "fear" would not apply. Also, the word "fear" may not be something that students are willing to admit or even recognize within their own experiences, limiting how

they may view their identification with the scale. The word "fear" in "Fear of Missing Out" is likely not intended to be the same type of fear that is elicited by other things such as heights, spiders, etc. It may not elicit the same physiological response that some of those more tangible fears can cause, but students may have viewed the term in light of those more concrete fears. This may have caused them to misinterpret the scale items and potentially downplay the effect these things have in their lives.

Estimation of Nonresponse Bias

As previously mentioned, estimation of nonresponse was difficult in this study due to the methodology. Although an approach comparing a group of early responders to a group of late responders would have been ideal, it was not possible given the fact that the majority of the surveys were completed at the same time in a classroom setting.

DISCUSSION

Residency Intentions

For this study, approximately 40% of respondents indicated intentions to pursue residency training after completion of the PharmD curriculum. When compared to data from a study conducted by AACP in 2016, in which 26% of respondents indicated intentions to pursue postgraduate pharmacy residency training, this percentage is slightly higher (AACP, 2016). Overall, the percentage of final year students intending to complete a residency was lower than students in earlier years of the pharmacy school curriculum (P4=182, P3=299, P2=352). This could be due to the fact that for students in the earlier years of the curriculum, the decision was not imminent. For the P4 students, the decision was a "real time" choice instead of a more

hypothetical one. It is important to note, however, that for many of the students in the earlier classes there is still a considerable amount of time left in their education in which they could change their minds about postgraduate plans.

Motivators

Relative Importance of Motivators

Overall, it appeared that students who intend to pursue residency training are highly motivated to do so. When evaluating the average score for each of the 23 factors, 20 received scores of 4 or higher (approximately the midpoint) and half of the factors had scores higher than 5 on a 7-point scale. When comparing the most important factors influencing student pharmacists' decisions to pursue a residency found in this study with previously reported results from McCarthy & Weber (2013), it was clear there were both similarities and differences. In both instances, the desire to gain knowledge and experience was considered to be one of the most influential factors, although it was separated in the current study into individual factors that resulted in rankings of 1 for experience and 3 for knowledge, respectively.

In this study, the second most important factor cited by the respondents was "anticipated job satisfaction" and this factor was not listed as a motivator in past research. This was an important finding as it identified a potential thought process among students in which they understood that in order to have future job satisfaction, or perhaps the job they ultimately desire, they felt the need to pursue training above and beyond that provided by the pharmacy curriculum. This was also found through the ranking of other "career related" factors such as "desire for competitive advantage in the job market," "prerequisite for certain jobs," and

"recognition of new and challenging future pharmacist roles" that were ranked as the 5th, 7th, and 9th most important factors respectively.

"Desire for specialized training", which was recognized as the third most important factor in previous research was ranked fourth in this study, indicating that it is still considered relatively important by student respondents, perhaps as a qualification to distinguish them in the job market. It is not unexpected that students would want to pursue opportunities that could set them apart due to the competitive environment surrounding the pharmacy residency selection process. However, there seemed to be an equal number of highly ranked factors that related to "improvement of skills or self" in addition to factors that related to "competitive advantage."

Of particular interest in this study was the relatively low ranking of factors that included some element of influence by others. Although the pharmacy profession has traditionally considered interactions with others in the field or direct influence of individuals such as faculty members, advisors, and employers as being very important, the rankings provided in this study show that these factors are not considered to be as important to the respondents as would have been expected. The factors "faculty stressing importance…", "advisor stressing importance…", "importance stressed by job or employer", and "family or peer pressure" were ranked as the last four factors in this study. These results should be evaluated with caution, however, as it was unclear what type of relationships each of the respondents had with regard to each of these factors. For future analysis, it would be interesting to separate "family pressure" from "peer pressure" and see if there is a difference in ranking when only considering individual influences.

Although it appears the respondents did not place much emphasis on influence by others, they did value interactions with both "role model pharmacists" as well as "residents in desired positions" as important in the decision to pursue residency training. This finding indicates that

students may value the opinions and influence of individuals within the profession who have an understanding of residencies and who have pursued the same path.

A final surprising finding with respect to the motivators for pursuing pharmacy residency training was the relatively low ranking of the factor "future financial rewards." This factor was intended to imply that students viewed residency training as a way to increase their future earning potential, something that has been found to be important to students in other research (Hagemeier & Murawski, 2014). In this study, this factor was ranked as number 18 out of the possible 23 in terms of importance, indicating that the potential increased future earnings were not considered to be a vital component of the decision to complete a residency. Perhaps an area for future research might include exploring when students become sensitized to the earning potential of career choices: students in early years may not be aware of the financial implications of enhanced skills and training.

Differences in Motivators Among Type of Pharmacy School Campus

Among this student sample, very few differences were seen when comparing the most influential motivating factors between those in pharmacy school on a medical center campus and those on a liberal arts campus. This result may indicate that an equal amount of influence was placed on the benefits of completing residency training among those students with the desire to do so, regardless of the environment. Also, this result shows that motivators were relatively unchanged among students, regardless of perceived prolonged access to the medical center environment that closely models some residency experiences. It was unclear if this information was built into the curriculum for students on a liberal arts campus or if they take the initiative to consider residencies on their own, but regardless, it was evident they value similar motivators.

One motivator in particular, "talking with fellow students" was the only factor that varied significantly between the two settings. The mean importance for this factor was higher for students on the liberal arts campus as compared to the medical center campus, possibly indicating that these students value the opinion or input from their peers more than students in the medical center environment. Although talking with peers likely occurs in either setting, it may be more valuable in the absence of clinical exposure or a variety of experiences that students may be alternatively pursuing.

Differences in Motivators Among Intended Practice Settings

As seen when comparing motivators among other groups, there were few differences among those students with the intention to pursue a career in the community setting versus those with a desire to pursue a career in the hospital setting. It is important to note here, however, that only those students who identified an intention to pursue a residency were asked to evaluate the list of motivators (those who did not intend to pursue residency were asked to identify barriers), so the number of students with the intention to do a residency and then subsequently pursue a career in the community setting was lower (n=10) compared to those who intend to have a career in the hospital setting (n=256). This may correspond with the lower number of community pharmacy residencies available compared to hospital-based experiences.

Among the motivating factors evaluated in this study, two were found to be significantly different among students intending to work in the community versus hospital settings. These factors were "recognition of new and challenging future pharmacist roles" and "future financial rewards", both of which were ranked higher by students intending to pursue the community careers. This finding indicates that these students have a desire to prepare themselves for future

practice demands and may view residency training as a way to increase their future earning potential in the community setting, possibly through expanded clinical service offerings, as well as to be prepared to go above and beyond the traditional community pharmacist roles.

Difference in Motivators Among Classes

Several significant differences were seen when evaluating motivators across the different years of the professional curriculum. Most differences were seen when comparing those in the fourth year to those in the second year and could be the result of limited knowledge and exposure to options during those initial years in pharmacy school. Final year students may sense more urgency and need to make a decision about the next step following graduation; further empirical research could identify whether this is so.

Among students planning to pursue a residency, an interesting difference was seen when comparing the classes on the motivator "future financial rewards." Although this particular motivator was not ranked very high in the overall list (18 out of 23), further analysis revealed that students in the second year of the curriculum perceived that completing a residency could provide them with an increase in financial rewards. This finding differed between students in the second, third, and fourth years and brings up an interesting point regarding students' underlying motivations for pursuing any form of postgraduate education and training. Are students in the earlier years of the curriculum motivated more by future increased earning potential and will pursue opportunities that may afford them a higher paycheck in the long run? Do they view residency training as a way to earn this higher paycheck and place a great deal of emphasis on this factor when making the initial decision to pursue this option, particularly in the absence of other more detailed information? From this study, it appears that students in the early years of

the curriculum are under the impression that "more training equals more money." Whether this is factual or not may depend on the practice setting and the opportunities that are afforded by the additional training, but it is an interesting topic area for further exploration.

Also of interest in this study was the increased emphasis placed by second year students on the desire for respect that is given to individuals with more training. This motivator was ranked as 14 out of 23 overall, so it was clear that there is importance placed on this desire among residency-focused students in all classes. However, the emphasis placed by the more junior class may suggest a perception that the residency itself brings respect, rather than realizing other factors that contribute to respect among colleagues. With possibly less exposure to the clinical environment and limited accessibility to those with advanced training, these junior students may have an unrealistic perception of the source of such respect.

When considering factors such as "desire to gain confidence" and "desire to gain knowledge," there was a significant difference seen when fourth year students were compared to second and third year students. This is an interesting finding because it can be argued that these types of motivators are more intrinsic in nature rather than the more externally motivated reasons for pursuing a residency that are seen among the younger students. It appears that the more advanced students understand the value in enhancing their skills and have an innate desire to improve their abilities as practitioners. This may be due to the acknowledgement of students that as they continue to learn and gain information, they may also become aware of how much they still may not know about a particular topic. This could potentially contribute to students' desire to pursue additional training, although future research is warranted to examine this difference between classes in more detail.

Barriers

Relative Importance of Barriers

Important barriers identified in this study differed slightly compared to previous research. In the 2013 study, the most important barriers identified were "financial obligations", "a job was available upon graduation", and "family obligations" (McCarthy & Weber, 2013). Of these, having a position already available upon graduation was a commonality and was considered the most important "barrier" among students not choosing to pursue a pharmacy residency. Financial obligations were measured differently in the current study and this original barrier was broken down into multiple components such as "delay of salary" and "student loan debt" to better reflect the different dimensions that can be seen with regard to financial considerations. Both financial components were considered to be highly influential in the decision to not pursue a residency. This is not unexpected as students graduating from pharmacy school are often concerned with money, particularly with repaying student loans. This concern is so great that even delaying a full-pharmacist salary by one or two years in order to pursue a residency is not considered "worth it." Although residencies do provide a salary, it is generally about 40% of what a full-time pharmacist might make per year (O'Shea, 2015). For some students, this pay discrepancy is enough to cause them to discount the residency experience as a viable option.

One factor that was not included in the previous study but was added to the current research as a result of the preliminary student interviews was "pharmacy school burnout" as it was assumed to be a factor that may influence the decision to pursue residency training. This new factor was ranked as the fourth most influential among the student respondents, which was not surprising given the amount of time required to obtain the doctor of pharmacy degree. For many

students, residency training is viewed as an extension of school and after spending a long amount of time in pharmacy school, they are burned out and not interested in additional training.

It was somewhat surprising that the factors relating to competition were not rated as more influential among the list of 20 factors. The factor "too competitive in my geographical area" was ranked as the 8th most influential factor while "too competitive in my clinical area of interest" was ranked as 13th, indicating that students are either not aware of just how competitive the process can be or they are not letting the idea of competition influence their decision to not pursue a residency. This is also evident by the factor "afraid of competition" being ranked as the 16th most influential factor.

Another interesting finding in the ranking of perceived barriers was the fact that "residencies are not really emphasized by my school" was ranked as the least influential barrier, seemingly indicating that students feel they receive adequate information regarding residencies. Perhaps these surveyed schools are perceived to place appropriate emphasis on the importance of pursuing a residency in order to obtain certain types of pharmacy jobs.

Differences in Barriers Among Type of Pharmacy School Campus

When comparing the mean scores for each barrier between students on a medical center campus versus those on a liberal arts campus, a few interesting differences were seen. Not only did students on the liberal arts campuses report not having as much information readily available to them, they also expressed fear that their grades are not good enough to get a residency position as a significant barrier in the decision to pursue that form of postgraduate training. Students on the liberal arts campus also identified overall fear of competition as a barrier to pursuing residency training. It would make sense that if these students were worried their grades are not

good enough, they were likely also worried about the competitive nature of residencies in general.

Pharmacy school burnout was reported as a highly influential barrier in students on both types of campus, but appeared to be more of a factor with students on the medical center campus, possibly due to the already clinical nature of the curriculum. A similar distinction has been seen in research comparing burnout among students on a founding campus with those on a distance campus (Ried, 2006). Although it may not be entirely clear why this difference between the campuses exists, one possible explanation may be the fact that students on a medical center campus may not be interested in residency training because they feel it will be "more of the same" or a continuation of the same type of experience. Because residencies most often take place in a clinical environment as well, some students may not be able to distinguish the differences between a residency and their pharmacy school career. For many clinical campuses, everything is pharmacy specific. This includes extracurricular activities and service opportunities, so students may feel like they never get out of the pharmacy mindset. It is possible that fewer outlets exist for students to channel their energy, or students perceive it to be that way, so they feel burned out by the clinical environment.

Another reason student pharmacists on medical center campuses may feel like they are burned out and may not want to pursue a residency is because they may not want to continue in such a potentially competitive environment. Although all pharmacy school environments can be competitive, it may be valuable to explore further whether those on a clinical campus have the potential to be even more competitive because of the influence of other medical professions and expectations students put on themselves to impress faculty members and preceptors in the clinical setting.

Differences in Barriers Among Intended Practice Settings

It is not surprising that students who already had a job available to them upon graduation would not pursue a pharmacy residency. From this study, it appears that more of those students have the intention of working in the community setting, which is also to be expected as many students intern in these settings during pharmacy school and are likely offered jobs at the same place. It is also not surprising that many students, mostly those with an intention to work in the community setting, would report that the decision to not pursue a pharmacy residency is highly influenced by geographic limitations of the programs. For these students, it is likely that more community-based jobs will be available when compared to hospital-based jobs. Due to geographical limitations, many students feel that pursuing a residency may not be "worth it" because they are not guaranteed to obtain one of a potentially limited number of positions in their geographic area. For some students having a position offered to them, particularly in the community setting, may equate to job security, less risk, and less competition than the residency option. For many students, the decision to pursue a career that does not include pharmacy residency training may have been the intention from the start.

Also seen in this research were barriers related to competition and a fear of not matching. In both instances, when these barriers were compared between students with different career intentions, students with the intention of hospital practice indicated that fear of competition and fear of not matching were more influential barriers when compared to individuals pursuing community practice (3.21 vs 2.49 for competition and 3.72 vs. 2.71 for fear of not matching). Perhaps these students really desire the hospital setting and would actually like to complete a residency, but feel as if they don't "fit the mold" of what a resident looks like so they may not be

competitive enough to get a position. For these students, maybe the fear of not matching is preventing them from even trying to obtain a residency position.

FoMO

All students answered the questions regarding the Fear of Missing Out (FoMO) as it can be applied to those who intend to pursue a residency as well as those who do not. When considering the cumulative scores among all respondents, the empiric average FoMO score of 2.04 may be perceived as low on the 5-point scale, but when is similar to the average score of 2.37 identified in a study among young adult university students which aimed to identify an association between FoMO and social media use (Przybylski, 2013). Despite the seemingly low score, preliminary phases of this study revealed that this phenomenon exists among student pharmacists. One possible explanation for this low FoMO average could be the choice of item statements in the existing scale. In particular, it may have been somewhat difficult for those students who do not intend to pursue a residency to answer some of the FoMO scale measures accurately because they included language that was residency specific.

Another possible explanation for the seemingly low FoMO score may be related to a self-report bias in this population. Although many students recognize that FoMO exists generally in their lives and others', it may be difficult to measure and even more difficult to identify in one's own life or situation.

When considering each individual item included in the scale, there are a few that received higher overall scores than others. One statement in particular, "It is important to me that I understand all potential residency options available to me so I can be competitive" received an overall score of 2.93 on the 5-point scale. This statement only strengthens the argument that

students are well aware of the competitive nature of the residency process and feel some element of pressure to be "in the know" regarding what is available.

Another statement that received a score that was somewhat higher than others was "compared to my peers, I fear I have not been involved enough in pharmacy school to get a residency." This is an interesting statement because it can allude not only to potential realization of the competitive nature of the process but also to students' perceptions of what is "enough" to obtain a residency. This particular area would be an interesting one to explore further and identify what students perceive to be the quality and quantity of extracurricular or even academically-related involvement that is necessary to be a competitive residency candidate. It is possible that the students' expectations for themselves may actually be higher than that expected by a program.

Along those same lines, the statement "compared to my peers, I fear my grades are not good enough to get a residency" was also scored similarly and again identified a competitive nature with peers in addition to self-imposed expectations for grades. Although there are residency programs that do require a certain GPA to be considered for an interview or for candidacy as a resident, the mark as to what this "GPA cutoff" really is may change from year to year depending on the applicant pool. Also, students place a great deal of emphasis on grades and may often fail to realize that although excelling academically in pharmacy school is important, many residency programs are also looking for well-rounded candidates who not only performed well in the classroom but also took time to invest in the profession and their own professional development (Gohlke, et al, 2014). The area of grades and academic performance is another in which further exploration may be interesting.

Differences in FoMO Scores Among Type of Pharmacy School Campus

When comparing the overall FoMO scores between campus types, the average score on the liberal arts campus was statistically significantly higher than the score on the medical center campus. Although the practically significant difference between the two scores, 2.15 for the liberal arts campus and 1.90 for the medical center campus, requires more exploration, it is an interesting difference to consider. When looking at each individual item on the scale, the items that resulted in a higher score for individuals on the liberal arts campus included statements such as "I fear my peers have more rewarding pharmacy school careers than me", "I fear my peers are more prepared for postgraduate training than me", and "I get worried when I find out my peers are learning more about residency training than I am". All of these statements asked students to consider their peers to be individuals at their own schools as well as other students at schools and colleges of pharmacy. Without knowing for sure the frame of reference the students used to answer the question, it is unclear if the higher scores are the result of thinking that students on other campuses may be exposed to more, but it is an interesting thought and deserves further inquiry.

Differences in FoMO Scores Among Intended Practice Settings

FoMO scores also differed between students intending to practice in the community setting versus those who desire to work in the hospital setting upon graduation. According to this study, those with hospital intentions had a higher average FoMO score than their community-focused counterparts. Again the difference was 2.24 for the hospital setting versus 1.80 for the community setting, making application of practical significance less clear. It is not clear at this time why the scores were different, but possible explanations could be a difference in perceived

competition to obtain hospital positions, including residencies. This study did not separate intentions to pursue a career in the hospital setting into residency vs. non-residency positions although this distinction would be valuable in future analysis to identify if FoMO is higher among those pursuing residency versus a hospital position with no residency requirement. Another possible explanation for the lower FoMO scores among those students pursuing the community pharmacy setting could be the somewhat "guaranteed" positions available to those students who had been working with the company throughout school. When taking into account the number of students who identified having a position already available to them upon graduation as a barrier to not pursuing a residency, it is possible that these students also do not experience as much FoMO with career choice because there is less uncertainty involved.

Differences in FoMO Scores Among Year in the Professional Program

Another interesting FoMO analysis is that of the differences seen in the scores across the different years of the professional curriculum. This study focused on P2s, P3s, and P4s in particular and did find that the scores changed as students progressed through the program. According to this analysis, students in the second year of the professional program experience more FoMO with regard to career choice than students in either the third or fourth years. A possible explanation for this difference is the fact that students further in the curriculum may be less impacted by "what others are doing" because they have dedicated more thought to their own interests and plans. This may be especially true for fourth year students for whom the decision of "what to do next" is impending causing them to place more emphasis on their own plans. Students in the second year of the curriculum may experience more FoMO because they may want to "follow the crowd" in the absence of their own clear career options.

Intention to Pursue Residency Training Using FoMO Score

This study indicated that only a small percentage (13%) of the variance when evaluating intention to pursue residency training was explained by average FoMO score. This is not particularly surprising as it was never expected that this relatively new phenomenon would explain a great deal of the decision-making process among student pharmacists when considering residency training. It was suspected, however, that this phenomenon would be present in this population and would at least have some level of influence, and the results of the analysis do support its role in the decision.

IMPLICATIONS

The concept of the Fear of Missing Out (FoMO) is one that is not uncommon among college students in their everyday lives, but formal studies regarding the topic are lacking. This study is the first known attempt at identifying and analyzing the concept of FoMO in student pharmacists, particularly with regard to career choice. This scale included items that are specific to this particular area of pharmacy and can aid those who work with students in mentoring and advising them on future career options.

In addition to providing some insight into the phenomenon of FoMO among student pharmacists, this study also serves as an update to the previously listed motivators and barriers associated with the choice to pursue (or not pursue) a pharmacy residency program. By addressing some of the past factors as well as adding in a few that have never been evaluated before, this new analysis provides a more comprehensive approach to identifying what is driving the decision to pursue residency training as well as what may be holding students back from this opportunity.

The results of this study provide valuable information to not only residency directors who are evaluating residency candidates but also to school and college of pharmacy administrators and faculty who are preparing students for the residency search and application process. By identifying motivators among those who want to pursue a residency, all involved can improve upon or incorporate approaches that focus on the aspects that are most important to students during the search and application process. Also, by identifying the most prominent barriers, the same administrators and directors can help students to overcome these barriers if their true intentions are to pursue a residency program but they feel like they are being held back. Finally, the evaluation of FoMO could potentially help those individuals mentoring students to identify whether or not the decision to pursue a residency is based on a fear that they are missing out on the opportunity rather than on true interest.

FUTURE DIRECTIONS

Potential areas of research identified through this study include mentorship as well as residency preparation. In terms of mentorship, this study only briefly addressed the idea of having a mentor in pharmacy school and brought to light the potential underutilization of mentors by students. Future research could aim at identifying how many students have both formal and informal mentorship through the process of choosing their postgraduate plans, what types of relationships they have with these mentors, and how influential these individuals are in helping students decide what to do upon graduation. Future research could also identify whether or not students find value in having a mentor as it appears through preliminary investigation that students may not realize the full potential of a mentorship relationship.

With regard to residency preparation, future directions could include more in-depth analysis of how many and what types of efforts are being employed at schools and colleges of pharmacy

across the country as well as whether some approaches are more successful than others at preparing students for the process. Many schools now offer both formal and informal residency preparation through coursework, seminars, and informational sessions. Future research could focus on identifying students' preferred methods of residency preparation as well as match results compared between those students who took part in such activities versus those who did not.

Also worth considering is further development and refinement of the FoMO scale in the pharmacy education environment. One plan is for the existing scale to undergo factor analysis to identify the factors that provide the most contribution to FoMO score. Through repeated administration, analysis, and validation, a finalized version of the FoMO scale could be developed for widespread distribution.

CONCLUSIONS

This study has not only identified both similarities and differences in motivators and barriers compared to past research in postgraduate decisions, but it has also started the investigation into the impact Fear of Missing Out (FoMO) may have during the postgraduate planning process. This study suggested that students place value on obtaining confidence and increased knowledge through postgraduate residency training while also setting themselves apart in an increasingly competitive job market. When discussing barriers to this additional training, students identified financial obstacles such as student loans or the delay of a full-time pharmacist salary as well as burnout or the availability of an existing job that does not require additional training. This study provided additional support for the main motivators influencing the choice to complete a residency while also helping to identify new motivators and barriers that have not yet been

researched such as burnout among student pharmacists with regard to pursuit of residency training, anticipated job satisfaction, family and/or peer pressure, and future financial rewards. With regard to FoMO in the pharmacy education setting, existence of the phenomenon in this setting has been established and further exploration will allow for development of a more detailed picture of the level and magnitude of the influence.

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LIST OF APPENDICES

APPENDIX A

INTERVIEW GUIDE

Thank you for agreeing to complete this interview with me today. The purpose of this interview is to identify motivating (and de-motivating) factors for choosing various postgraduate pharmacy options. Before we get started though, I am going to ask you a few introductory questions.

Introductory Questions

1. If you could be anything in the world, what would it be? Why?
2. What made you decide to go to pharmacy school?
    a. (prompt) Experiences, people, etc.
3. Do you have any experience working in a pharmacy environment?
    a. Please describe this experience

Knowledge of Postgraduate Pharmacy Options

1. How much thought have you given to "what comes next (after pharmacy school)"?
2. If you were asked to describe the options available following graduation, what would you describe? What would be on your list?
    a. [if student only lists some options, provide more options and ask why these were not listed or considered]
3. How have you been exposed to options following graduation?
    a. (prompt) coursework, curriculum, extracurricular experiences, mentors, etc.
4. What do you think are the positive aspects of these different options?
5. What do you think are the negative aspects of these different options?
6. Of these options, which seem the most attractive to you?
7. Compared to your peers, do you feel like you have the same postgraduate intentions? Or do you feel like what you want to do is different than other students?

Goal Setting and Postgraduate Plans

1. Please describe your short term goals? (less than 5 years)
    a. Show timeline and ask student to write out goals
2. Please describe your long term goals (more than 5 years)
    a. Show timeline and ask student to write out goals
3. What are your current plans immediately following graduating from pharmacy school with your PharmD?
    a. What are your next steps to reach your goals? (be specific)
    b. How do you plan on pursuing your preferred postgraduate option?
4. At what point do you feel like you had a clear idea of what you wanted to do upon graduation? (year in school) What was the "turning point"?
    a. It's okay if you don't know
5. What experiences have you had that influenced this decision? Why this option?
6. Who are the people in your life who influence your postgraduate career choices? Why?
    a. Family?
    b. Peers?
    c. Mentors?
    d. Other faculty?
    e. Employers?
    f. Others?

7. If you were asked to identify positive influences (motivators) that contribute to your decision of postgraduate path, what would they be?
8. Now let's think about this from the standpoint of negative influences – what do you view as perceived barriers (de-motivators) to pursuing this path or a path that you would really like to pursue?
9. If I were to ask you the same question in 2-3 years at graduation, would you say the same thing? Why or why not?

Additional P3/P4 Questions

1. Imagine you are a P1 again and I ask you the same question about postgraduate plans, do you feel like your answer would have been the same? Why has it changed (not changed)?
2. Has your reason for choosing pharmacy as a career changed over time? How so?
3. Are your motivations for pursuing your desired path the same now as they were when you entered pharmacy school? If they have changed, why?

FoMO

Scenario: Some people have a fear of missing out. This can be a fear of missing out on social events or a need to always be connected via social media such as Facebook to make sure that they are not missing out on something their friends are doing.

1. One of my research interests is to explore the idea of a fear of missing out on experiences and how this fear can impact postgraduate decisions among student pharmacists. Do you feel that this fear of missing out is something that influences all student pharmacists in general? What about on a personal level, ie. just you?
2. Do you feel that there are things you are afraid of missing out on by not pursuing an opportunity or are their opportunities you just can't pass up?
3. Do you feel like there are opportunities you cannot pass up, even if they are not in line with the goals you described to me earlier?
4. Have you made any choices that caused you to miss out on something and now you regret it?
5. Do you recall a time when you did something because it was what you "thought you should do" rather than something you wanted to do as it relates to missing out? Please describe.

Script for Motivation Ranking Activity

There are lots of things that influence our decisions on a daily basis. These can be influences that push us toward something or push us away from something. For the last exercise, I want you to consider a list of factors that can influence our decisions. I want you to read the whole list and think through each of the options. Then I want you to select the **main 3 factors** that you feel will influence/are influencing your decisions regarding postgraduate options.

Thank you for your participation. Before ending the interview, do you have any questions for me?

APPENDIX B

SURVEY INSTRUMENT

Postgraduate Plans Survey

The purpose of this survey is to identify the factors influencing your decisions regarding postgraduate pharmacy residency programs. The following survey should take approximately 10 minutes, the results will be kept confidential, and participation is voluntary. You may choose to end the survey at any time or skip any questions you do not want to answer. Your answers to these questions will not affect your grades in any class or your standing in the University of Mississippi School of Pharmacy.

This study has been reviewed by The University of Mississippi's Institutional Review Board (IRB). If you have any questions, concerns, or reports regarding your rights as a participant of research, please contact the IRB at (662) 915-7482 or irb@olemiss.edu.

I have read and understand the above information. By completing the survey/interview I consent to participate in the study.

1. **What is your current professional year in pharmacy school? Please circle**

   P2 P3 P4

2. **What is your age?** _____years

3. **What is your gender? Please circle** Male Female

4. **What is your ethnicity? Please circle**
   a. White/Caucasian
   b. Black/African American
   c. Hispanic/Latino
   d. Native American/American Indian
   e. Asian/Pacific Islander
   f. Other (please specify): _____

5. **How many WEEKS of experiential education (including IPPEs and APPEs) have you completed to date?** _____ weeks

6. **Do you have <u>other</u> experience (not counting IPPE/APPEs) working in a pharmacy environment?** Yes No

7. **<u>If yes,</u> in which pharmacy environment(s) do you have experience and how long has each experience been (in months)? (if no, skip to question 8)**
   a. Community pharmacy (chain) _____ months
   b. Community pharmacy (independent) _____ months
   c. Hospital pharmacy _____months
   d. Other (please describe) _____ months

8. Do you have family members who are pharmacists? Yes No

Most of us have someone (often several people) from whom we get advice or mentorship, whether that person is a family member, a faculty member, an employer, or even a senior student

9. Has your mentor(s) completed a residency or other post-graduate training? Yes No

10. Please select the social media outlets you currently use (circle all that apply)

a. Facebook
b. Twitter
c. Instagram
d. Other (please specify):

_____

11. Please estimate the TOTAL number of times you check social media per day

_____ times per day

12. Please indicate the TOTAL number of times you post to social media per day

_____ times per day

Postgraduate Career Options

There are several ways in which we are exposed to different career options, and based on our interests, we may have many exposures or just a couple. This section will ask you to identify ways that you either heard or learned about different options available to you upon graduating with your PharmD. Please think about the ways in which you have gathered information about these options and answer the questions accordingly.

13. Which of the following are ways in which you feel like you were exposed to postgraduate options? (please select all that apply)

- ☐ Guest speakers/assemblies
- ☐ Mentor(s)
- ☐ Personal work experience (work, extracurricular, etc.)
- ☐ Coursework/electives/lectures
- ☐ Experiential education (IPPEs/APPEs)
- ☐ Looking up things on my own
- ☐ Other (please specify): _____

Of the above exposures, please circle the ONE you feel is the BEST way to introduce students to postgraduate career options.

14. When do you think is the best time to begin exposing students to information about postgraduate options?

a. Pre-pharmacy
b. P1 year
c. P2 year
d. P3 year
e. P4 year

Postgraduate Career Plans

This section asks you for information about your current career intentions following graduating with your PharmD. Please think about what you are planning to do as of today, and answer each question accordingly.

15. In which setting do you intend to practice after getting your PharmD?

a. Community pharmacy (chain or independent)
b. Hospital pharmacy
c. Other (please describe) _____

16. As of today, are you planning to do a residency after getting your PharmD?

Yes	**No** **(if you don't know, then it's no for now)**
Please proceed to and complete page 4	Please proceed to and complete page 5

17. Motivators (please complete this section if you answered YES to question 16)							
We all have different reasons for pursuing the educational and career paths that we take. Looking at the following possible reasons, how would you say each of these factors has influenced your decision to pursue postgraduate residency training? *** 1 = little to no influence on my decision, 7 = a great deal of influence on my decision**							
Desire to gain knowledge	1	2	3	4	5	6	7
Desire to gain experience	1	2	3	4	5	6	7
Desire for specialized training	1	2	3	4	5	6	7
Recognition of new and challenge future pharmacist roles	1	2	3	4	5	6	7
Desire to gain confidence	1	2	3	4	5	6	7
Desire for challenge of postgraduate training	1	2	3	4	5	6	7
Anticipated job satisfaction	1	2	3	4	5	6	7
Interaction with role model pharmacists	1	2	3	4	5	6	7
Faculty stressing importance of residency training	1	2	3	4	5	6	7
Advisor stressing importance of residency training	1	2	3	4	5	6	7
Importance stressed by job or employer	1	2	3	4	5	6	7
Talking with fellow students	1	2	3	4	5	6	7
School of pharmacy's emphasis of these programs	1	2	3	4	5	6	7
Interaction with residents in desired positions	1	2	3	4	5	6	7
Family or peer pressure	1	2	3	4	5	6	7
Desire to gain employment at a particular institution upon completion of the program	1	2	3	4	5	6	7
Prerequisite for certain jobs	1	2	3	4	5	6	7
Future financial rewards	1	2	3	4	5	6	7
Desire for respect given to those with advanced training	1	2	3	4	5	6	7
Desire for prestige that comes with completion of residency training	1	2	3	4	5	6	7
Desire for autonomy in my future job	1	2	3	4	5	6	7
Availability/accessibility of information regarding options	1	2	3	4	5	6	7
Desire for competitive advantage in the job market	1	2	3	4	5	6	7

Please proceed to PAGE 6

18. Barriers (please complete this section if you answered NO to question 16)

We all have different reasons for pursuing the educational and career paths that we take. Looking at the following possible reasons, how would you say each of these factors has influenced your decision to **NOT** pursue postgraduate residency training?

*** 1 = little to no influence on my decision, 7 = a great deal of influence on my decision**

A job is available to me without extra training	1	2	3	4	5	6	7
Delay of salary	1	2	3	4	5	6	7
Student loan debt	1	2	3	4	5	6	7
Family obligations	1	2	3	4	5	6	7
Geographical limitations	1	2	3	4	5	6	7
Individuals advising that residencies are not necessary	1	2	3	4	5	6	7
Feeling unprepared	1	2	3	4	5	6	7
Residencies are not really emphasized at my school	1	2	3	4	5	6	7
Grades are not good enough to qualify for a residency position	1	2	3	4	5	6	7
Information about residency options is not readily available	1	2	3	4	5	6	7
Information about the application and “matching” process is not readily available	1	2	3	4	5	6	7
Timing of program to inform us was not convenient (poor attendance)	1	2	3	4	5	6	7
Too competitive in my geographical area	1	2	3	4	5	6	7
Too competitive in my clinical area of interest	1	2	3	4	5	6	7
Afraid of competition	1	2	3	4	5	6	7
Fear of not matching	1	2	3	4	5	6	7
Pharmacy school burnout	1	2	3	4	5	6	7
Worried about number of work hours required per week	1	2	3	4	5	6	7
No one really mentored me about residencies	1	2	3	4	5	6	7
Worried that advanced training may be too difficult	1	2	3	4	5	6	7

Please proceed to PAGE 6

19. Fear of Missing Out (please complete this section if you answered YES or NO to question 16)

The Fear of Missing Out (FoMO) has been defined as "a worry that others may be having a rewarding experience and you are not included" and is characterized by "the desire to stay continually connected to what others are doing." This phenomenon is one you have likely heard in recent years, but its impact on decision making among student pharmacists is limited. In this section, you will be asked to read the statement and then identify if the statement sounds "Not at all true of you" or "Extremely true of you".

	Not at all true of me	Slightly true of me	Moderately true of me	Very true of me	Extremely true of me
I fear my peers (students at my school and other schools) have more rewarding pharmacy school careers than me	1	2	3	4	5
I fear my peers are more prepared for postgraduate training than me	1	2	3	4	5
Compared to my peers, I fear I have not been involved enough in pharmacy school to get a residency	1	2	3	4	5
Compared to my peers, I fear my grades are not good enough to get a residency	1	2	3	4	5
I get worried when I found out my peers are learning more about residency training than I am	1	2	3	4	5
I get anxious when I don't know what my friends are up to with regard to learning more about residencies	1	2	3	4	5
It is important that I understand the residency options my friends are considering, in case I may be interested too	1	2	3	4	5
It is important to me that I understand all potential residency options available to me so I can be competitive	1	2	3	4	5
Sometimes I wonder if I spend too much time worrying about residencies	1	2	3	4	5

19. Fear of Missing Out , Continued					
Sometimes I wonder if I spend too much time keeping up with what my friends are planning to do with regard to residencies	1	2	3	4	5
It bothers me when I miss an opportunity to learn about residencies	1	2	3	4	5
When I miss out on a planned residency interest meeting, it bothers me	1	2	3	4	5
When something good happens to me that may be relevant to a future residency, it is important for me to share the details online	1	2	3	4	5
Even when I may not be interested in a residency for myself, I continue to keep tabs on what my peers are doing with regard to residency training	1	2	3	4	5

ASHP Midyear Clinical Meeting Attendance (for P4s ONLY)

The ASHP Midyear Clinical Meeting is considered one of the most popular ways in which to learn more about residency programs across the country as well as make personal contact with representatives from these programs. This section will ask you questions about your attendance at this meeting.

1. **Did you attend the ASHP Midyear Clinical Meeting in December 2015?**

2. **If <u>YES,</u> please answer the following questions:**

	Not at all true of me	Slightly true of me	Moderately true of me	Very true of me	Extremely true of me
I was overwhelmed by the residency showcase	1	2	3	4	5
Compared to my peers, I felt confident in my knowledge of the residency showcase	1	2	3	4	5
Compared to my peers, I felt prepared for the residency showcase	1	2	3	4	5
I was anxious when I saw other students preparing for the showcase	1	2	3	4	5

VITA

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CURRENT POSITIONS

Doctoral Student **August 2013 – present**
Department of Pharmacy Administration
University of Mississippi School of Pharmacy
University, Mississippi

Adjunct Clinical Assistant Professor of Pharmacy Practice **August 2013 – present**
Purdue University College of Pharmacy
West Lafayette, Indiana

PROFESSIONAL EDUCATION AND TRAINING

PGY2 Pediatric Infectious Disease Residency **July 2010 – June 2011**
Arkansas Children's Hospital
University of Arkansas for Medical Sciences
Little Rock, Arkansas
Director & Primary Preceptor: Holly D. Maples, PharmD
Certificate awarded June 2011

PGY1 Pediatric Pharmacy Practice Residency **July 2009 – June 2010**
Arkansas Children's Hospital
University of Arkansas for Medical Sciences
Little Rock, Arkansas
Director: Holly D. Maples, PharmD
Certificate awarded June 2010

Doctor of Pharmacy **2007 – 2009**
University of Mississippi School of Pharmacy
University, Mississippi
Degree Conferred: May 2009

PROFESSIONAL EDUCATION AND TRAINING (CONTINUED)

Bachelor of Science in Pharmaceutical Sciences with a
Dual Track in Pharmaceutical Marketing and Management **2003 – 2007**
University, Mississippi
Cum Laude
Degree Conferred: May 2007

PROFESSIONAL EXPERIENCE

Pharmacist (PRN) **March 2015 – September 2015**
Baptist Memorial Health – North Mississippi
Oxford, Mississippi

Graduate Student Assistant
Research Integrity and Compliance **June 2014 – March 2017**
University of Mississippi Institutional Review Board
University, Mississippi

Clinical Pharmacist, Pediatric Antimicrobial Stewardship **November 2012 – July 2013**
Riley Hospital for Children at Indiana University Health
Indianapolis, Indiana

Clinical Assistant Professor of Pharmacy Practice **September 2011 – July 2013**
Purdue University College of Pharmacy
West Lafayette, Indiana

Clinical Pharmacist, Pediatric Infectious Disease & HIV **September 2011 – July 2013**
Riley Hospital for Children at Indiana University Health
Ryan White Center for Pediatric Infectious Disease
Indianapolis, Indiana

Clinical Assistant Professor of Medicine **September 2011 – July 2013**
Indiana University School of Medicine, Department of Medicine
Indianapolis, Indiana

Instructor, University of Arkansas for Medical Sciences **August 2009 – July 2011**
College of Pharmacy
Little Rock, Arkansas

AWARDS AND RECOGNITION

University of Mississippi School of Pharmacy PY1 Teaching Assistant of the Year	2016, 2015
Purdue University College of Pharmacy Preceptor of the Year	2013
Spirit of PPAG Award	2013
American Pharmacists Association Distinguished New Practitioner Award	2013
Purdue University Teaching for Tomorrow Fellowship Award	2012

CERTIFICATES AND LICENSES

Mississippi Board of Pharmacy License #P13654	2014 – present
American Academy of HIV Medicine Credentialed HIV Pharmacist	2012 - present
Indiana Board of Pharmacy License # 26024130A	2011 – 2013
Arkansas Board of Pharmacy License #PD11104	2009 – present
Collaborative Institutional Training Initiative (CITI) Program Human Research Training	2009 – present
Postgraduate Teaching Certificate Program University of Arkansas for Medical Sciences College of Pharmacy	2009 – 2011
HIPAA Compliance Training	2007 – present